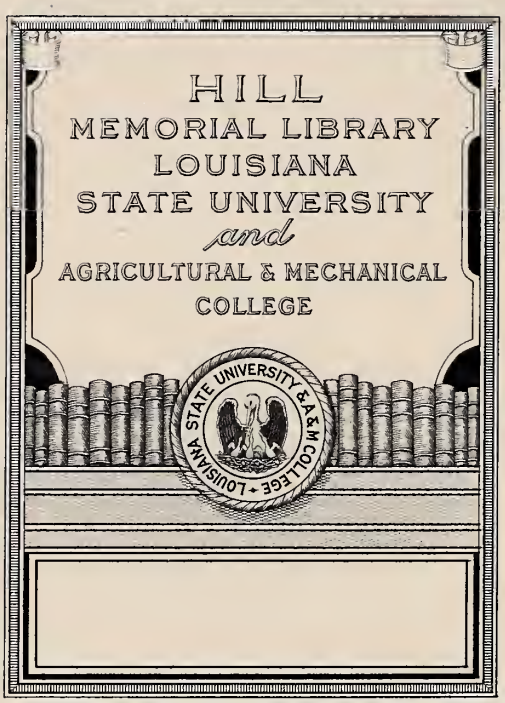
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Baton Rouge, La.

THE

SUGAR BULLETIN

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We stand for the encouragement of Home Industries as against foreign competition.

Vol. 4 NEW ORLEANS, LA., OCTOBER 1, 1925 No. 1

THE ANNUAL MEETING

The Annual Meeting of the American Sugar Cane League was held on September 24, 1925, in Room E on the Mezzanine floor of the Hotel Roosevelt, New Orleans.

The following Officers and Executive Committee were elected to serve during the ensuing year:

President: Stephen C. Munson, of Assumption Parish
1st Vice-president: David Pipes, Jr., of Terrebonne Parish
2nd Vice-president: Lewis E.Murrell, of Iberville Parish
3rd Vice-president: C. P. Burguieres, of St. Mary Parish
4th Vice-president: Ovide Lacour, of Pt. Coupee Parish
5th Vice-president: Reginald Dykers, of Orleans Parish
Treasurer: Frank L. Barker, of Lafourche Parish
Secretary: W. H. Chaffe of Orleans Parish

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R. H. Chadwick
George Pitcher
Jules Godchaux
C. E. Smedes
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Langdon Laws
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H. N. Pharr
Chas. Billeaud

(Continued on next page.)

THE
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The Louisiana Sugar Planters' Assn.
The American Cane Growers' Assn.
The Producers & Mfgrs. Protective Assn.
Subscription Price, 50 Cents Per Year.

John M. Rogers, Washington Representative,
810 Union Trust Bldg., Washington, D. C.
Reginald Dykers, General Manager & Editor of the Bulletin,
301 Nola Bldg., New Orleans.
Wm. H. Chaffe, Secretary,
301 Nola Bldg., New Orleans.

CHAIRMEN OF COMMITTEES:

S. C. Munson, Napoleonville, La.
President of the League and Ex-Officio Chairman of Executive Committee

Stephen C. Munson, Napoleonville, La.
Chairman Agricultural Committee

Andrew H. Gay, Plaquemine, La.
Chairman Industrial Committee

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David Pipes, Jr., Houma, La.
Chairman Publicity Committee

Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

(Continued from first page)

In the absence of President Burguieres who removed his place of residence to Florida some two months ago, the meeting was opened by the 1st Vice-president, Mr. Munson, who gave a brief account of what had been accomplished during the past fiscal year under the leadership of Mr. Burguieres. The report of the Treasurer, Mr. Frank L. Barker, was then read, and showed the League to be in excellent financial condition.

Mr. Andrew H. Gay then addressed the meeting concerning investigations recently made in connection with the growing of sugar beets in Louisiana as an auxiliary to the production of sugar cane, and he offered the following resolutions:

WHEREAS: Experiments have been conducted by the Louisiana Experiment Station covering a period of five years in the planting and growing of Sugar Beets in Louisiana, and analysis and observation have shown encouraging results, and—

WHEREAS: During the season of 1924 and 1925 plots of sugar beets have been grown in several sections of the sugar belt with continued success and with results that justify further and more extensive plantings, it is now proposed to plant and grow under the supervision of the Experiment Station Authorities, one hundred acres of beets in not less than ten sections of the area where sugar is grown in Louisiana, for the purpose of demonstrating and experimenting in the general and practical culture of Sugar Beets.

WHEREAS: In order to carry out the proposed practical demonstration of the commercial value of beets and the manufacture of same into commercial sugars, it is necessary to erect a suitable slicing and diffusion plant where the 100 acres of beets to be raised can be converted into sugar.

THEREFORE BE IT RESOLVED: That the American Sugar Cane League, the official organization of the sugar industry in Louisiana and representing more than 4,000 sugar growers and manufacturers and tax payers, in regular session convened this day, hereby endorses the movement set forth in this resolution, and respectfully requests and urges His Excellency, Governor Henry L. Fuqua, and the Board of Supervisors of the Louisiana State University to provide such funds as in their judgment may be necessary to erect and operate an experiment and demonstration plant at the new sugar factory at the University at Baton Rouge for the purpose of determining the most practical method of manufacturing sugar beets into commercial sugar and such other information as may be of value to the sugar planters and farmers of the state.

BE IT FURTHER RESOLVED: That this experiment is very far reaching, in that its successful culmination offers to the farmers of the entire State an opportunity to produce a new and profitable crop. Further, that a copy of this resolution be forwarded without delay, to Hon. Henry L. Fuqua, the Board of Supervisors of the Louisiana State University and to Dr. W. R. Dodson, Dean of the Experiment Stations of Louisiana.

This resolution was adopted without opposition and will be sent to the Governor of Louisiana by the Secretary of the League.

The reading of the report of a committee appointed some time ago by the Acting President of the League to study the subject of the possibilities of beet sugar production in Louisiana excited great interest and fortified the action of the meeting in adopting the resolution offered by Mr. Gay. The committee making the report was composed of Messrs. J. W. Supple, Chairman; Dr. W. R. Dodson, Dr. C. E. Coates, Mr. Gilbert D. Von Phul, Prof. A. F. Kidder, Mr. David Barrow and Mr. B. Sandman.

Then followed the nomination and election of officers and members of the Executive Committee as set forth previously herein and following the election the meeting adjourned.

Field Day at Baton Rouge

Dr. W. R. Dodson, Dean and Director of the Louisiana Experiment station, has announced that the Annual Field Day which has been tendered by the Experiment Station authorities to the sugar planters of the State for such a long period of years, will be held this year on October 13th at the grounds of the Experiment Station at Baton Rouge.

It has been customary to hold the Field Day during the summer months but this season circumstances have rendered this impossible and the above mentioned date in October has now been selected.

The Experiment Station authorities will mail invitations broadcast throughout the sugar district but should anyone fail to receive an invitation it is desired that this public notice shall be accepted by them as a cordial request to attend.

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Is a Frost a Freeze.?

On November 25, 1924, a severe freeze occurred in the Louisiana sugar region, the thermometer going as low as 24 degrees in some places and to 28 or 30 degrees almost everywhere. All cane intended for seed that had not already been put down was killed and rendered useless for planting. The warnings sent out by the United States Weather Bureau at New Orleans for this freeze read as follows:

"Nov. 24th: SOUTH LOUISIANA, FROST TO COAST WITH TEMPERATURE 35 TO 40 DEGREES IN SUGAR AND TRUCKING REGIONS TUESDAY MORNING."

"Nov. 25th: SOUTH LOUISIANA, PROBABLY FROST TO COAST; NO CHANGE IN TEMPERATURE FORECAST AS IT IS EXPECTED TO CONTINUE COLD."

The Executive Committee of the American Sugar Cane League took this up with Dr. Isaac M. Cline, United States Weather Forecaster at New Orleans, who contended that a prediction of "Frost to the coast" might mean a temperature low enough to kill the eyes of the sugar cane. Without entering into a further discussion as to whether the warnings quoted above foretold a temperature of as low as 24 degrees, 28 degrees or 30 degrees, we now want to say that, with the object in view of avoiding any similar misconception of conditions during the forthcoming fall and winter, the Executive Committee at its meeting September 14th appointed the General Manager of the League as a committee of one to discuss with Dr. Cline the interpretation that should be put on his frost and freeze warnings henceforth.

The matter has been taken up with Dr. Cline who makes the statement that whenever his office issues a forecast reading "frost in the sugar and trucking region," or "frost to the coast" it will be advisable for planters to take the safe course and put down seed cane. It should be borne in mind, therefore, that the United States Weather Bureau considers a "frost" warning to mean that a situation will develop dangerous to the eyes of the cane. Dr. Cline was requested by the General Manager of the League to be more specific and to include in his forecast a definite statement that the temperature anticipated would endanger the seed cane, but he declined to do so. This request was made because Dr. Cline admits that the warnings of "frost in the sugar and trucking region" or "frost to the coast" do not always mean that a temperature will be reached endangering the eyes of the cane and that if seed cane is put down because of these warnings it will frequently be put down unnecessarily. As Dr. Cline refuses to make his warnings more specific, however, the only thing to do is to consider such frost warnings as quoted above as endangering seed and act accordingly, or else take a chance.

Dr. Cline desiring to make a statement in writing we take pleasure in publishing a communication from him as follows:

New Orleans, September 19, 1925

Mr. Reginald Dykers, General Manager,
American Sugar Cane League,
407 Carondelet St., New Orleans, La.

Dear Mr. Dykers:

Referring to your favor of September 15th, relative to warnings for sugar interests:

Planters generally understand that when forecasts are issued for temperatures of 28 degrees or below the standing cane for grinding should be windrowed.

On account of the large area covered by the sugar cane crop, with the varying frost conditions over that area we would not attempt in the forecasts to cover advices to planters to put down seed cane except when unusally low temperatures are indicated early in the season. *When the forecast is for "Frost in the sugar and trucking region", of Louisiana, or "Frost to the coast", it would be advisable to take the safe course and put down seed cane.*

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especially on dark soils causes much lower temperatures in the fields than are recorded in thermometer shelters. Our temperature forecasts, when specifically stated, are forecasts of expected temperatures to be recorded in the thermometer shelters at stations in the area affected.

It would be well for planters to advise us from time to time as to the amount of seed cane still standing. We understand that planters generally consider it unsafe to leave seed cane in the fields after November 20th in any year, as the *average date* of first killing frost for the sugar region is about this date.

I think this letter covers everything we can contribute to a definite understanding on the subject. I have deemed it best to write out our views in order that there may be no misunderstanding.

Respectfully,
(Signed) I. M. CLINE,
Meteorologist in Charge.

Cane Borer Clinic at Baton Rouge

Sufferers from Diatraea Saccharalis to the number of nearly a hundred assembled in Garic Hall, at Louisiana State University, on Sept. 18th to take part in a general discussion between victims and doctors as to the best means of combatting this pestiferous affliction, which is more generally called by its English name—the cane borer. Some of those present, in order to make it a real clinic, brought leaves of sugar cane with them on which there were clusters of borer eggs, and these were subjected to scrutiny through microscopes, especially to ascertain to what extent they had been parasitized.

The conference was called by Dr. W. R. Dodson, Dean and Director of the Lousiana Experiment Station, who was actuated in doing so by the fact that the cane borer has within the past month or so unloosed an attack on the Louisiana cane crop that is one of the severest on record. Senator Edw. J. Gay of Iberville was the presiding officer.

At first it seemed as though the occasion would degenerate into a mere experience meeting, of which we have already had so many, and at which each man relates his troubles and no two people agree as to how to get rid of them, but before long the new spirit that now animates the Louisiana sugar planters began to manifest itself and it became apparent that most of those present realized that they were there for a purpose. The members of the staff of the Experiment Station did not attempt to be leaders in the discussion, nor did they claim to know of any panacea for the trouble. The age-old controversy of burning the trash vs. plowing it under had a brief inning, but there was a thoroughly practical trend to the discussion and an evident desire to get the concensus of opinion as to what steps should be taken right now, at planting time, to help the situation. Dr. Dodson very cleverly brought the sentiments of the meeting to the crystallizing point by calling for a show of hands on certain essential points and when the meeting was over everybody who attended it knew what the majority of those present thought about certain important courses of action. These were summarized by Dr. Dodson, as follows:

First: That where the cane has been badly damaged by the borers, it would be advisable to plant somewhat earlier than under normal conditions.

Second: The majority of the planters advised using more seed cane where borer infestation was bad.

Third: All were agreed that the cleanest and best cane should be used for planting; this would generally mean that the back fields and cane from the black lands should be used for seed.

Fourth: It was not deemed feasible to purchase seed cane from locations not severely infested with cane borers and transport it for planting to regions where cane borers are numerous.

Fifth: It was the unanimous opinion that the prevalence of the cane borer should not interfere with the plans of seed selection; and that all work along that line should be continued.

Sixth: It was generally agreed that the borer damage to P. O. J. 234 should not interrupt the plans for giving this variety as thorough test as possible, in the fall plant cane.

Seventh: Very few planters are planning to treat seed cane with either cold or hot water.

During the course of the meeting Dr. W. E. Hinds, Entomologist of the Louisiana Experiment Stations, was called upon for a statement in regard to the status of parasitism of cane borer eggs at the present time. In his reply he stated that in examinations made at Baton Rouge and vicinity, during the past two weeks, it has been found that more than ninety per cent of all cane borer eggs are parasitized by a small wasp which is the most effective natural enemy of the cane borer in this State. The wasp lays her eggs in the egg batch of the cane borer moth and in about ten days the next generation of wasps emerges therefrom. In the meantime, the color of the eggs has turned nearly black. These parasitized egg batches are much more easily found than the unparasitized eggs, which are rather pearly in color and much more transparent than are the parasitized eggs.

Similar conditions were reported by Mr. D. N. Barrow of the Staff of the Experiment Station for other localities where he had made examinations recently. Several growers corroborated these statements.

It would appear that if this condition of egg parasitism is general the next generation of the cane borer will be checked decidedly by the egg parasite.

In reply to questions, also, Dr. Hinds gave a brief outline of some recent experimental work in dusting sugar cane by airplane in an attempt to control the cane borer larvae. In these tests, one of the special dusting planes used by the Uff-Daland Dusters, Inc., for cotton dusting, was utilized. In part of the tests straight calcium arsenate, as used for boll weevil control, was the only material applied. This was applied in one and two applications, the second being given four days after the first. The distribution of calcium arsenate through the cane plant appeared to be very ideal; much of the dust lodged in the axils of the leaves and even extended

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further down into the leaf sheath, where many of the worms enter the stalk. In spite of this ideal distribution of the dust, however, it did not appear that straight calcium arsenate was effective in killing the cane borer larvae. The larvae appeared to be able to crawl over the calcium arsenate dust and refused to eat it; but few dead larvae were found in later examinations of the calcium arsenate dusting plats.

In another test, calcium arsenate was used with five per cent by weight, of dextrin added. Dextrin is a sweetish substance, used quite extensively as a sticker with arsenical poison. About twelve pounds of calcium arsenate per acre, with the dextrin added, was used in these tests, and in later examinations it appeared that about twenty per cent of the worms were killed upon the stalks thus dusted. This percentage of control was more satisfactory than in the tests made without dextrin but still not sufficient to justify the hope of effective borer control by this material.

In other plats, an application of straight sodium fluosilicate was given, at the rate of about seventeen pounds per acre. This material has been used to a slight extent, in recent years, in insect control and has shown promise in some problems where arsenicals have been less effective. In examinations made several days after the dust was applied, it was found that practically two-thirds of all cane borer larvae to be found on the stalks were dead. The killing appeared to continue for several days longer, no rains having fallen in the meantime, until in the examination of ten stalks, not a single living cane borer larvae remained. However the cane leaves were pretty badly burned by the application, and it remains to be seen how much the cane was damaged.

These small scale tests, said Dr. Hinds, should not be considered as more than a mere indication of what may be possible, but do constitute a fair basis for planning a more extensive series of similar tests during the coming season.

Errata

In the last issue of the Bulletin we published a list of the members of the American Sugar Cane League who had paid their dues for the year 1925. The list comprised between 4,000 and 5,000 names and in handling so many names, first through a stenographer and then on the linotypes, there were unfortunately 13 names omitted. These names we print below with expressions of our sincere regret for the error:

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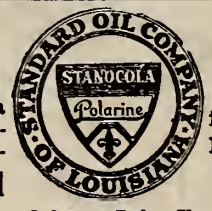

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THE
SUGAR BULLETIN

Entered as second class matter April 13, 1925, at the postoffice at New Orleans, La., under the Act of March 3, 1879.

We stand for the encouragement of Home Industries as against foreign competition.

Vol. 4 NEW ORLEANS, LA., OCTOBER 15, 1925. No. 2

A Statement By President Munson

I wish to appeal to the members of the League, and all others interested in Louisiana sugar, to unite in purpose and work for the betterment of our industry. Many adversities are crowding in upon us and it is only in unity that we will find the strength to go on.

As President of the League, I intend to support and aid anyone and everyone who sincerely works for the advancement of our industry. The League is interested in what you are doing and wants to help. Let us know what you are doing and we will join you and support you.

Let us subordinate our individual selves to the task of improving and advancing our industry, and put this above any personal gain.

Of course, honest differences of opinion will exist and good-natured rivalry is most advisable, but destructive criticism and the desire to tear down whatever does not agree with one's own ideas is one of the several conditions that have bound us to the past and prevented preparation for the future.

Certainly now we must prepare for the future—a future not without many misgivings—and we need to know about every man's labor on his own problems, in order that we may all profit by the work of each of us.

STEPHEN C. MUNSON,
President American Sugar Cane League of the U. S. A.

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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Dr. Cline and His Weather Reports

BY JOHN M. ROGERS.

The article, "Is a Frost a Freeze?" published in *The Sugar Bulletin* of October 1, again brings out forcefully the need for the use by scientists of words and phrases measured by common usage, and clearly understood by the public when so measured. The warning of November 24 and November 25, 1924, did not warn of freeze. The letter by Dr. Cline of September 19, 1925, in no way cleared up this or explained the issue.

Dr. Cline undoubtedly desires to render every aid to the sugar industry. He is one of the independent district forecasters; the government employs only five such independent district forecasters—this makes Dr. Cline's office directly responsible for his forecasts.

The margin of safety in temperature is close and of such financial importance to sugar-cane industry that warnings should clearly distinguish between "Frost" and "Freeze". So important is this that no effort should be spared to localize warnings just as far as is humanly and scientifically possible. Would it not be worthwhile to gather weather data, particularly temperature readings from every individual in the sugar district who keeps records, and endeavor to correlate these records with those officially secured and kept by the government? Dr. Cline, in letter of September 19, refers to the "* * * large area covered by the sugar cane crop, with the varying frost conditions over the area * * *", again to "Radiation on clear nights in open fields, especially on dark soils, causes much lower temperatures in the fields than are recorded in thermometer shelters at stations in the area affected". There are two practically stable conditions referred to, namely, "open fields and dark soils"; clear nights would vary but little from the "stations in the area". A record on plantations of temperature readings, especially if for a period of years, should furnish a basis for correlation so that variants could be established and a scale of variations made up for each plantation. This would require the planters who have kept records to send to Dr. Cline a copy of such records with all possible data. Dr. Cline should endeavor to work out correlations and variants based on the comparison of the records with station records. Charts of variants for each plantation could then be made up, so that the temperature forecasts sent out by Dr. Cline could be readily applied to the plantation or section keeping records. This method would localize the district reports, in terms of degrees of temperature, without the confusion of interpretation of such words as "Frost" or "Freeze".

Will the planters co-operate by compiling and sending their records to Dr. Cline?

The Price of Sugar

BY JOHN M. ROGERS.

It is not within the province of the American Sugar Cane League to predict or speculate on the price of sugar, but the price of sugar is a vital factor in the business of its members. The price of sugar influences the production, just as vitally as production influences price. The lower the price the more necessity there is for attention to cost of production. During every tariff hearing in Washington, particularly the last one by the Tariff Commission, in government studies, publications on sugar costs, it has been fully proven and stated that the principal cost of sugar production in the United States is in agriculture, the growing and harvesting of the crop. This has come to be fully appreciated by all sugar producers. Intensive study is now in progress on agricultural betterments and economies. "The Sugar Club of Cuba", an adjunct of the seaboard refiners—American owners of Cuban sugar from field to consumer—has appropriated $500,000 for the use of the "Tropical Plant Research Foundation" for the study of all things affecting the cost of producing sugar cane on the plantations of its contributing members in Cuba. A recent statement coming from Cuba says in effect that the agricultural cost of cane production must be so lowered that Cuban sugar can dominate sugar production for the American market. Intensive study is being made in an effort to find and introduce new and better varieties of cane, combat diseases, improve cultural methods, and in every way reduce agricultural costs. The American owners of Cuban sugar are seeking to increase the per acre production, and their total production to the point where, by lowered cost, they can, through price-reduction, drive

out both American and native Cuban competition, to these owners of this organization. It is still "Cuba the Cuckoo"—just another cuckoo's egg laid. To the American sugar producer another well-laid plan of attack. In self-defense, if for no other reason, American sugar growers must produce more sugar per acre at less cost per pound, must subordinate differences, must turn from criticism to co-operation, must accept and couple the scientific with the practical, must train men in agricultural, as well as factory production.

The contest is on. Hawaii seems to have first realized what was coming and has progressed farther than any other unit under the American flag. Porto Rico is awakening; Louisiana producers have shown marked progress, but there is yet much to do; an intensive competitive era is on. American capital definitely and fully intends to complete its conquest of Cuba, eliminating the less efficient native Cuban producer, and smother by volume of low-cost sugar the American producer. The tariff is not now, never has been, and it is exceedingly doubtful that it will ever be high enough to measure the difference in cost of production between Cuban and Louisiana sugar. Louisiana must, through lower agricultural cost, or increased unit production, maintain its present relative cost position, tariff included, and strive to overcome some of the tariff deficiency. Cuban dominant influences, while working on lower production cost and increase of volume, are ever striving for added supremacy through tariff reduction. On the recent visit to the United States of ex-President Zayas of Cuba, the press reports him as favoring a moderate increase in the duty on Cuban sugar, accompanied by a proportionate increase in Cuba's preferential, out in the open, shut out all foreign sugar except Cuban, anything temporarily, even a higher duty if thereby a greater preferential can be secured, of course then reduce the duty but retain the higher preferential. Other foreign competition shut out completely by special favors to Cuba, domestic production smothered by volume of low-cost sugar, the first to be attempted by the United States Sugar Association, through treaty, the second by the Tropical Plant Research Foundation under the auspices of the "Sugar Club of Cuba", both owned and controlled by American capital growing cane in Cuba refining sugar in America.

Louisiana producers must meet the issue by closer co-operation for lower-cost production.

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Field Day Meeting at Baton Rouge

BY WM. H. CHAFFE.

A very interesting meeting was held at the Louisiana State University Experiment Station, Baton Rouge, on the call of Dr. W. R. Dodson, Director, on Tuesday, October 13th, which was attended by seventy-two sugar planters and others, besides the students of the Agricultural Department, numbering some sixteen.

The meeting in the forenoon was devoted to field observations and a great deal of interest was shown in the different varieties of cane standing in the fields, especially P. O. J. 234, of which there was a fine presentation. Dr. W. R. Dodson delivered a most interesting lecture on the different varieties of cane as they were passed, calling attention to their good points. This field demonstration and lecture took up the greater part of the morning. They were certainly most interesting and instructive and we will venture the statement that there was no one present who did not feel that he was well repaid by his attendance. This demonstration at about noon was adjourned to the lecture hall, where a delightful luncheon was served by ladies.

After luncheon Mr. S. C. Munson was elected chairman of the meeting. A most interesting indoor meeting and lecture were held on the different matters of interest to the industry, devoted more especially to the moisture absorption of the soil, all of which was very interesting indeed and listened to most attentively by those present, who, by invitation, took part in the discussion of the subject and showed much interest in it.

The matter of holding these meetings oftener was presented and the hope was freely expressed that

this would be done, for the benefits derived from same were certainly well worth the effort.

All in all, a most interesting and instructive day was spent by all present. We greatly regret that as this report is available just at the moment this issue of the Bulletin goes to press it is impossible to give a more elaborate and detailed account of the meeting.

A Call

New Orleans, La., October 5, 1925.

We, the undersigned citizens of Louisiana, believe that co-operative effort is necessary for the general welfare of our state.

To attain successful results of such co-operative endeavor a state-wide organization is necessary, properly financed and managed.

We invite all citizenship of the State of Louisiana, in favor of such action, to attend an organization meeting to be held in Alexandria, Louisiana, Saturday, October 17, 1:00 P. M., in the auditorium of the City Hall.

The purposes and objects for which the Louisiana Development League is to be created are as follows:

To dedicate its activities to the service of the State of Louisiana;

To work for the industrial, agricultural, commercial, financial development and special welfare of the State of Louisiana;

To assist in the strengthening of existing chambers of commerce, boards of trade and other commercial organizations, county fair bureaus, live stock and agricultural societies, and to assist in the formation of such bodies wherever deemed advisable;

To promote public health conditions;

To aid and assist in bringing about better agricultural, horticultural and live stock conditions;

To advocate a permanent system of hard-surfaced roads and the development of industries;

To utilize the reclamation of overflowed and waste lands;

To arouse the people of Louisiana to a larger sense and fuller appreciation of the possibilities in the development of the state and to advertise Louisiana's opportunities;

To co-operate with all departments of the national and state governments, state agricultural colleges and experiment stations, both national and state, and county agricultural high schools in the development of Louisiana's resources;

To co-operate with all town, city, county and state officials, members of the Legislature to the end that Louisiana may progress.

It shall not be the object of the Louisiana Development League to make money or profit for the said organization or any of the officials or members thereof.

To attain success to these ends depends upon co-operative action and organization and financial support of the parties interested and from the people generally.

(Signed:)

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Our Cane In Florida

The Freight Rate Committee of the American Sugar Cane League is making progress in connection with securing a reasonable freight rate on the sugar cane now growing at the plot rented by the League at Canal Point, Fla., and which is to be distributed to members of the League for planting purposes next spring.

At first there appeared to be very serious difficulties in the way of getting this cane delivered in

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Louisiana at a transportation cost that would be reasonable but later developments have led the committee to believe that they will succeed in securing a freight rate that will be quite satisfactory. All of the railroads involved are being approached through the proper channels and fully informed of the nature of the shipment and the purpose for which it is intended and we hope by the time the next issue of this Bulletin goes to press to be able to state with comparative certainty that definite arrangements have been made for the transportation of this cane at a cost that will work no hardship on our members.

The Federal Laboratory Near Houma

There is nothing new to report in connection with the construction of the Federal Laboratory near Houma except that the whole matter is progressing along proper and favorable lines under the supervision of Mr. W. R. Burk, New Orleans architect, engaged by the Building Committee of the League to supervise the construction. The building will be a most attractive and substantial structure and it will be used in connection with the activities of several government scientists whose sole object and purpose will be to do what they can to help us in Louisiana toward more prosperous conditions than have ever been enjoyed hitherto by our Louisiana sugar producers. There is no reason why such an accomplishment is impossible, or even improbable. The investigations and discoveries of the United States Department of Agriculture equipped as it is with an enormous corps of scientific men, and backed as it is with the Federal appropriations necessary to carry on its work, may reasonably be expected to throw a light on our sugar cane agriculture which we have never before had The Federal Laboratory in Terrebonne Parish is merely a small tool they have requested the League to give them to do their work with.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912,

of Sugar Bulletin, published semi-monthly at New Orleans, La., for October 1, 1925:

STATE OF LOUISIANA, } ss.
Parish of Orleans. }

Before me, a notary public in and for the state and parish aforesaid, personally appeared Reginald Dykers, who, having been duly sworn according to law, deposes and says that he is the editor of the Sugar Bulletin, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of Augnst 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of Publisher—American Sugar Cane League of the U. S. A., Inc. Postoffice Address—407 Carondelet street, New Orleans, La.
Name of Editor—Reginald Dykers. Postoffice Address—407 Carondelet street, New Orleans, La.
Managing Editor—None.
Business Manager—None.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individnal owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

American Sugar Cane League of the U. S. A., Inc., 407 Carondelet street, New Orleans, La.; S. C. Munson, Napoleonville, La., president; David Pipes, Jr., Houma, La., vice-president; W. H. Chaffe, New Orleans, La., secretary.
No capital stock.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent or more of

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5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is: (This information is required from daily publications only.)

(Signed) REGINALD DYKERS,

Sworn to and subscribed before me this 1st day of October, 1925. C. De LUCAS. Notary Public.

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We stand for the encouragement of Home Industries as against foreign competition.

Vol. 4 NEW ORLEANS, LA., NOVEMBER 1, 1925. No. 3

All persons, firms and corporations who ordered from the American Sugar Cane League certain weights of P. O. J. 234 cane and fully paid for same and who have not received the entire weight ordered and paid for are hereby requested to immediately present statements of the shortages, to the American Sugar Cane League, 407 Carondelet St., New Orleans.

THE
SUGAR BULLETIN
407 Carondelet St., New Orleans
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The American Cane Growers' Assn.
The Producers & Mfgrs. Protective Assn.
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301 Nola Bldg., New Orleans.
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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Local Report on Cane Varieties

Godchaux Sugars, Inc., through Mr. Walter Godchaux, has supplied the Sugar Bulletin with some very valuable data concerning the new varieties of cane now growing on what is known as the Upper Ten Plantation Sub-Station located on one of the Godchaux properties in the Parish of Lafourche.

The report, prepared by Mr. Horace Nelson, agricultural superintendent for the Lafourche Parish properties of Godchaux Sugars, Inc., refers to eighteen different varieties of cane that have been grown at the Upper Ten Sub-Station this season. Mr. Nelson's comments are as follows:

U. S. 639: This is the cane which showed a disease or blight and which was cut down during the summer.

P. O. J. 2379: Fair barrel; fair growth; badly bored; rooted and sprouted. A large percentage of late suckers.

U. S. 653: Good stools. Tall and vigorous.

Uba: Same as above.

P. O. J. 213: Fair stalks; badly bored; large percentage of tops bored and dead.

U. S. 1489: Considerably sprouted; ordinary looking cane.

P. O. J. 228: Fair stalks; fairly uniform; borer damage not unusually great. Stands slightly better than 234.

P. O. J. 234: In general appearance does not look as good as 228, which has more uniform stalks to stool and stands up better than 234. P. O. J. 234 has more stalks to the stool, but a large percentage of them are not developed; 234 has considerably more poor tops than 228.

U. S. 766: Shows up very well. Good vigorous growth; uniform development; tall and upright. Few borers. Very few sprouts. Good tops. Not rooted at joints.

P. O. J. 979: Well-developed barrel. Badly bored. Large percentage of late suckers. At one time this was the best-looking cane in the plots, but it is not now. Either a slow cane, or borer damage has affected growth. It has about the best diameter of barrel of any of the varieties.

P. O. J. 36: As a whole looks very good. Good development and growth. Borer damage slight. Heavy and vigorous looking. No sprouts or roots at joint. Noted some split joints. Also noted one very poor stool in this variety.

U. S. 1712: Tops in bad shape and worst of any of the varieties. Badly bored and badly rooted at joints.

U. S. 595: Tall and vigorous. Rather small barrel. Exceptionally good stools. Taller than 36. Not excessively bored. Joints fairly clean but rooted some.

U. S. 672: Tall and upright. Good growth and development. Clean cane. Borers not extensive. Stand rather thin.

P. O. J. 139: Vigorous growth and development. Borer damage rather heavy. Some tops affected. Not sprouted or rooted.

U. S. 429: Vigorous growth and development. Uniform stalks. Very few borers. Clean cane. No sprouts or roots. Considerable cane down.

P. O. J. 826: Well-developed barrel. Good diameter. Not tall. Fair stools, but large percentage of late suckers. Shows considerable mosaic disease. Some stalks badly rooted. Considerably bored.

U. S. 534: Very tall. Probably the tallest cane of all varieties. Small diameter. Borer damage very slight. Very clean cane, but sprouted and rooted to quite an extent.

In addition to the above Mr. Godchaux has supplied us with the following list of laboratory tests:

RESERVE REFINERY
October 19, 1925
Plant Cane

	Brix.	Sucrose.	Purity.
D-74	13.59	9.68	71.30
P. O. J. 139	9.10	3.78	41.50
P. O. J. 826	10.60	5.68	53.60
P. O. J. 228	9.20	4.86	52.80
P. O. J. 2379	11.70	6.80	58.20
P. O. J. 213	11.40	7.36	64.60
U. S. 635	8.10	3.79	46.80
La. Purple	11.10	6.65	59.90
P. O. J. 36	10.60	5.49	51.80
U. S. 639	9.20	3.95	43.00
U. S. 672	9.50	4.77	50.20
Cayana 10	10.90	5.88	54.00
U. S. 1489	10.40	5.45	52.40
U. S. 429	8.40	3.22	38.40
P. O. J. 979	10.30	5.49	3.30
U. S. 595	9.80	4.78	48.80
U. S. 712	11.10	7.37	66.40
U. S. 534	11.40	6.54	57.40
U. S. 766	9.00	3.45	38.30
U. S. 1712	10.60	6.49	61.20
Uba	10.10	4.80	47.60
P. O. J. 234	11.30	7.09	62.80

RACELAND PLANTATION
October 22, 1925
Plant Cane

Material.	Brix.	Corr. Brix.	Polar.	Sucrose.	Purity.
U. S. 534	9.45	9.60	22.40	5.62	58.54
P. O. J. 826	10.20	10.40	26.50	6.67	64.13
U. S. 639	8.15	8.30	16.20	4.09	49.28
P. O. J. 228	8.30	8.45	15.20	3.83	45.33
P. O. J. 213	9.10	9.25	22.60	5.68	61.41
U. S. 653	8.65	8.80	18.00	4.54	51.60
Uba	9.05	9.20	21.40	5.38	58.48
U. S. 595	8.40	8.55	16.50	4.23	49.48
P. O. J. 234	8.55	8.70	15.50	3.90	44.83
P. O. J. 139	7.55	7.70	14.40	3.64	47.28
U. S. 1712	8.85	9.00	23.20	5.84	64.89
P. O. J. 2379	9.50	9.65	21.20	5.34	55.34
P. O. J. 979	8.80	8.95	20.20	5.08	56.76
U. S. 766	9.40	9.55	20.40	5.12	53.62
U. S. 1489	9.15	9.30	24.40	6.14	66.03
P. O. J. 36	8.45	8.60	18.60	4.69	54.54
P. O. J. 672	8.65	8.80	18.50	4.66	52.96
U. S. 429	9.50	9.65	22.10	5.54	57.41

RACELAND PLANTATION
October 22, 1925
Native Varieties

	Corr. Brix.	Sucrose.	Purity.
Mary	12.15	8.07	66.41
Scudday	15.0	11.84	78.93
Raceland	11.75	8.23	70.05
Utopia	11.4	7.32	64.21
Upper Ten	11.0	7.08	64.37

New Organization Formed

The Louisiana Development Association, having for its object the advancement of the State of Louisiana and the development of its varied resources, was organized October 17 at a state-wide conference in Alexandria.

The American Sugar Cane League was represented at the conference by Mr. H. S. Burrowes of Rapides Parish. Speaking in behalf of the League, Mr. Burrowes said there are two sugar factories in Rapides and about twenty members of the League, although Rapides is not considered a sugar parish. He said the League is an organization which assists the sugar industry to get over the hard places, which it encounters at intervals. He said the League favored the proposed development association and believed it would be a benefit to the state.

New Government Bulletin on Cane Sirup Making

A comprehensive bulletin covering all phases of the production of sugar cane sirup—from the growing of the cane to the marketing of the sirup—will be ready for free distribution early in November.

The various methods for clarifying the juice are described in detail, these descriptions being supplemented by cost data and a discussion of the relation

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between the method of manufacture and the quality of the sirup. Descriptions of model plants and equipment are given, accompanied by drawings and a complete discussion of the cost of making sirup by different methods.

The bulletin discusses the relation between the cultural conditions under which sugar cane is grown and the quality and yield of sirup. The factors which determine the most economical size of a new sirup plant are set forth in detail. The prevention of sugaring by the use of invertase, a process developed by the Bureau of Chemistry, is fully described. Data on the composition, food value, and keeping quality of cane sirup are also given, as well as information regarding the production of uniform grades, the canning of sirup, and the question of marketing.

It is Department Bulletin No. 1370, entitled "Sugar Cane Sirup Manufacture", and may be had upon application to the Office of Publications, U. S. Department of Agriculture, Washington, D. C. Any questions regarding the various points brought out in this bulletin should be addressed to the Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.

The Louisiana State University

By John M. Rogers.

The Louisiana State University and the Agricultural Experiment Station connected therewith is keenly interested in and desires to aid the Louisiana sugar industry. This is evidenced by the plan to so equip their new sugar factory that a thorough test can be made of sugar beets grown in Louisiana. The work on sugar cane and cane sugar will, of course, in no way be interfered with or lessened by this addition. This move is real co-operation—the planters and, of course, the experiment station, will grow the beets; further evidence of interest and co-operation lies in the greatly enlarged and improved cane plantings on the station grounds and at the several experiment and demonstration stations located in the sugar parishes. This work is of great value—the spirit of co-operation as shown is a real service rendered; it means demonstration, experimentation, education, the purposes for which the Experiment Station and State University were created.

There is a service for L. S. U. to perform that precedes this work, however, a duty going back to the very reason for the founding of this great school—that is, the training of the young men of the sugar belt in the agriculture of sugar plants. This is not to say that this has not or is not being done, nor is it to say that the chemistry and manufacture of sugar should be less emphasized, and the station and field experiments and demonstrations be curtailed; on the contrary, these should be expanded to the limits of finance and ability. In truth, both finance and ability should be materially added to, but the future of successful sugar production in Louisiana, both cane and beet, lies fundamentally in agriculture. The industry is today face to face with sugar competition which realizes that production cost must be lowered and that the principal cost of sugar is agricultural. In most of the sugar world, attention has heretofore been centered on lowering manufacturing costs; great improvements have been made in the factory, including the chemistry and physics of sugar production after the cane and beets have been harvested.

Louisiana has for many years maintained a sugar school at L. S. U., which probably has led all others in teaching the agriculture of sugar cane—but has there been a definite aim and sustained purpose to train boys native to the Louisiana sugar district in the production of sugar cane? How many owners of sugar farms, how many field superintendents, how many overseers, have specialized in the agriculture of sugar? Has any conscious effort, aside from occasional press articles or routine annual catalog announcements, been made? Has the L. S. U. or any sugar planter in the state directed the attention of the boys and young men of the sugar district to the opportunities ready and awaiting them for employment in cane fields of Louisiana? Have boys of the sugar district sought special courses in the chief industry of their home environment? Have the courses in agriculture and its application to sugar been selected by boys of the sugar district in comparable proportion to those of the law, engineering, chemistry, teaching, or the arts and sciences courses? If not, why not? Is it not especially notable in Louisiana that the sons of sugar growers, whether proprietors or employees, succeed their fathers as sugar growers? Is it not a fact that most of the knowledge of sugar cane growing in Louisiana is that gained by practical application? No better knowledge than that practically gained could be obtained, but is it enough? Should not the fundamentals of agronomy, plant, fertilizer and soil chemistry, to mention only these of a long list, added to the practical, be of value?

The Louisiana sugar industry is seeking trained men, trained both in practice and science. Recently a worthwhile salary was offered by a large producer of Louisiana sugar cane. The man receiving the offer was not a Louisianian. The statement was made that a man with the proper training was not available in Louisiana; he should have been—L. S. U. should have furnished him!

Schools supported by public funds owe a definite duty to the public (the state) supplying such funds. Such funds expended by the state should be an investment; no public school, college or university is a charitable institution; funds expended for public education are neither donations or taxes; such expenditures are investments; if they do not bring returns, as on investments, the expenditure of such funds should be stopped. Too much has been and it being said sentimentally about public schools. It should be confidently expected that every graduate from a state school should return to the state a material profit, outside the individual earning or community standing of the graduate. Every state institution of learning should presume that its graduates are to return to the community from which they came and take back with them the added value of the education gained at the expense of the community and state; therefore, should be educated with relation to needs of the state and community. Whatever may be said in sentiment and altruism, this is the duty of colleges and schools, supported by the state, or any of its component parts. Private institutions may canvass the land or the world for its student body, but state-supported schools are bound by the very

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nature of their resources to make commensurate return on these resources as investments to the state or community furnishing the resources. With this purpose in view, the schools should enlist and be given the support and co-operation of the state, community, and citizenship, in addition to money appropriated.

In the Louisiana sugar district, in addition to the lawyer, teachers, and all other professional needs, the boys of the sugar farms should be shown the advantages and dignity of the industry of their fathers, as a profession. The co-operation of federal government should be availed of through its extension service and club work, (a boys' Cane Club in every community), organizations such as the American Sugar Cane League should give support to the extension and club work and to the university; towns and communities should co-operate, as to them the greatest direct returns on investment would come.

The University should further organize, expand and make conscious effort to secure and train in the science of agriculture the boys who have practical training behind and before them in growing cane, and let us hope successfully beets and the production of sugar therefrom. Let the money invested by the state and community make proper returns to the state and community. It is the duty of L. S. U. to add the fundamentals of science to the existing and practical knowledge of sugar production in Louisiana. By this means must Louisiana strive to meet the lowered cost of sugar production being sought by her competitors.

The Anatomy of Sugar Cane

The Department of Agriculture is continuing the study of the anatomy of sugar cane with special reference to its fiber structure, including the root system. The one print so far issued is by Ernst Artschwager, and published by authority of the Secretary of Agriculture with the co-operation of the Association of Land-Grant Colleges.

While this work is of a specialized scientific nature, practical results are indicated. Inquiry of Dr. E. W. Brandes resulted in a memorandum which we take the liberty of publishing, though it was not prepared for publication in this form.

> "Among other practical applications of this type of work, the question of utilization of bagasse for manufacture of lumber substitutes may be put on a much more refined basis. That is, by a study of all of the varieties that we find to be suitable for Louisiana we may discover that the relative amounts of fibers of different kinds vary considerably. We already know as a result of preliminary work that hybrids resulting from crosses between noble canes (like Louisiana Purple or Ribbon) and Northern India canes (like Chunnee) have about 20% more fiber than the varieties now grown in Louisiana. The hybrids above mentioned include 36, 213, and 234 P. O. J. This increase is of total fiber. We have not yet examined these varieties to determine the relative amounts of the different kinds of fibers. I expect to take up a study of a number of promising varieties with regard to the amount in kind of fiber some time this winter. A preliminary report

on the first varieties studied will probably be released within a few months. Naturally we do not yet know all varieties that will be suitable for Louisiana, and on account of the amount of work involved it would not be advisable to undertake such an investigation of a variety until we are fairly certain that its other characteristics are such as would make it valuable for the sugar district."

If in gaining disease resistance, therefore increased sugar production, we can have in addition a more valuable bagasse, another gain is made. Studies of varieties will not require so long a period now that the general foundation studies have been carried so far.

Other possibilities of value are suggested. It may be proven that the celulose can be separated without reducing the value of the bagasse for substitute lumber production. It is reported that the Du Pont Company is trying out something along this line. They refer to the crude product as X pulp.

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Announcement is made that (weather permitting) a mill test of P. O. J. 234 cane and Cayana cane will be made at Southdown Plantation, Houma, La., on Nov. 23, 1925, beginning about 10 a. m. The Estate of H. C. Minor, owner of Southdown, will be glad to have anyone interested present. The American Sugar Cane League will be represented by a special committee appointed to witness the test and make a report on it.

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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Abolish The Cuban Preferential

The treaty with Cuba, including the "Platt Amendment" of 1903, was negotiated for the purpose of protection to the industries of the Island Republic, and for the benefit of the United States. The framers of this treaty and amendment believed it would enable the inhabitants of the island to outgrow the effects of years of oppression by Spain and establish themselves as an independent people, engaging in the development of the island's varied resources in commerce and agriculture. The rate of duty on Cuban products entering the United States was fixed at 20 per cent under that of any other country. The rates on products of the United States, exported to Cuba, had no such fixed differential. Cuba, instead of going forward in the development of her general resources, allowed immediate exploitation by American capitalists of a single line, namely, sugar production. Except tobacco, sugar is practically the only industry that has been developed in Cuba, and that not by Cubans but by Americans. The benefit expected to accrue to Cuba through the preferential tariff treatment has been diverted and is now beneficial to the American owners and refiners of Cuban sugar—this to the great detriment of the growers of sugar, both cane and beet, on American soil. The adoption of the Cuban reciprocity treaty caused the immediate abandonment of a large number of beet sugar factories that were in process of organization and erection, has limited the expansion of cane sugar production in Louisiana and the buying power of our insular possessions, has given Cuba a favorable balance of trade of more than one and a half billion dollars for the twenty-two years since the adoption of the preferential tariff rate and to the producer of sugar in Cuba a subsidy of three hundred million dollars that would have gone into the treasury of the United States; has expanded the Cuban sugar industry from less than one million tons annually to practically six million tons annually. The great bulk of this production is now owned, produced and refined by American capitalists. These, and not the Cubans, get the benefit of the 20 per cent preferential; these, and not the American sugar consumers, get the benefit of this 20 per cent preferential. The effect of the law has been diverted from its purpose. Producers of Cuban Sugar (American capitalists) have benefited through preventing sugar from other foreign nations from competing with them for the American trade, and in turn have used this preferential rate as a subsidy through which to so lower the price of sugar at strategic points and periods as to severely cripple the American sugar producer, thereby preventing expansion of sugar production on American soil. The effect of the Cuban preferential has turned to a subsidy to American capital, it being withheld from the United States treasury, but a subsidy just as truly as if paid out, the taxpayers standing the loss.

The growers of sugar on American soil are today receiving 44c per 100 pounds less for their sugar than they would but for this subsidy to American capitalists—owners of Cuban sugar.

The Cuban treaty should be removed, thereby saving the domestic growers of

sugar from the ruin that now faces them. Realizing the necessity for prompt and favorable action, and believing that when the Congress is fully advised of the effect of this subsidy that it will promptly legislate to abolish the preferential of the 20 per cent tariff subsidy to the Cuban sugar growers, Congressman Whitmell P. Martin is prepared to give this matter attention in the early days of the coming session of Congress.

We Get The New York Price

At a recent meeting of the Executive Committee of the American Sugar Cane League a resolution was adopted asking the producers of sugar in Louisiana and their broker representatives to take part in a consultation at the office of the American Sugar Cane League for the purpose of arriving if possible at some mutual understanding which would prevent ruinous sacrifices of the crop. It was recognized that the low prices prevailing for sugar, and the necessities of some of the planters who required prompt financial returns from their output, might result in establishing a level of values that would be disastrous to the entire sugar-producing fraternity of the state. It was recognized, of course, that no measures could be suggested or advocated which did not include the active co-operation of the New Orleans banks, as through their assistance alone could any action be taken that would result in withholding from sacrifice such sugars as were "in distress". "In distress" is a descriptive term long ago adopted in New York and applied to sugars held by people who were so circumstanced that they could not avoid dumping them on the market for whatever figure they could get. Few things have affected the market in sugars more unfavorably at critical times than the existence of sugars "in distress".

Every sugar producer in Louisiana was invited to the conference at the League office and there was an excellent attendance, either in person or through their broker representatives, and the bankers of New Orleans were also represented by presidents and vice-presidents of several of the leading banks. These bankers assured the sugar producers, without hesitation, that they would stand behind them in rendering assistance to them, and that no sugars need be considered in distress, as advances on them would be forthcoming promptly to enable the owners to avoid sacrificing their produce. It was agreed by the sugar producers present that there was no reason why Louisiana sugars should be sold at any price under the New York price, and the conference adjourned with the general understanding that sugars sold on the New Orleans market ought to get that price.

The League is very happy to report that the first raw sugar sold this season of the Louisiana crop was consummated on November 6, and comprised some 38,000 bags, all of it being sold at the New York price prevailing that day 3.89c. Again, on November 9, a second sale of Louisiana raws was reported at the full New York price on that day, 3.96c. Later sales were made at the New York price prevalent on the day of sale. All this speaks for itself, and we believe that the effort of the League to safeguard the selling interests of its membership as much as possible at this critical time has borne substantial fruit.

Cane Borer Infestation In P. O. J. 234 Cane

Mr. Arthur H. Rosenfeld, cane technologist of the Insular Experiment Station of Porto Rico, has contributed a timely article to *Facts About Sugar*, entitled: "Borer Infestation in P. O. J. 234 Cane", and it appears in the October 17, 1925, issue of that magazine. We reproduce portions of the article below. Mr. Rosenfeld says that his experience with this cane both in Argentina and Porto Rico was similar to our experience this season with it in Louisiana, that is to say, it was heavily attacked

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by the cane borer when first introduced. To quote Mr. Rosenfeld:

"The alarm of the Louisiana planters in regard to the reported heavy infestation of the new Java P. O. J. 234 cane plantings after they had been given to understand that this particular variety is very resistant to the attacks of the stalk borer, *Diatraea saccharalis Fab.*, reported in correspondence published in recent issues of Facts About Sugar, is one of the phenomena commonly noted during the change from old standard, slower-growing types of cane such as Demerara 74, Striped or Purple, to a vigorous, quickly germinating and rapidly developing type, such as is represented by the P. O. J. seedlings, in almost any country, particularly if the era of first rapid extension and interest in the new canes happens to coincide with droughty conditions and pronounced borer abundance. Our experience in Argentina some dozen years ago, when a similar violent varietal change was proceeding apace in the province of Tucuman, was along very similar lines and, despite the fact that observations at the Sugar Experiment Station showed that joint infestation by borers in the P. O. J. seedlings was always 60 to 70 per cent lower than that in the Striped or Purple canes, we received many complaints in the early years of the attacks of borers in the new seedlings. Almost without exception investigation showed that the Java seedlings had germinated or stooled earlier and more luxuriantly than the so-called 'native' canes, with the result that, when the first borer moths emerged, the vigorous new plantings, with their exuberant growth and dark green color, acted as true 'trap crops' for them, they being naturally attracted to this apparently succulent growth for egg deposition. Hence, for the first generation at least, the P. O. J. seedlings would show very heavy infestation—even heavier than the thicker type of cane—until the growth of the latter was sufficiently pronounced to also attract the moths. It should be said here, however, that these conditions applied only to plant cane, as even in very young stubble the increased fiber content of the P. O. J. canes quickly made itself felt in the mitigation of the pernicious effects of borer attack, whereas the stubble of the 'native' canes starts off quicker than plant, and the attraction to the few fields of the new seedlings is not so pronounced. Then, also, we found that, as the areas of the new canes increased, the tendency of the small patches to serve as "drawing cards" for the borer moths was naturally reduced, as these larger areas served to distribute the infestation more evenly over the plantations."

Mr. Rosenfeld was in Louisiana last spring and wondered, at that time, if history would repeat itself and the small plots of P. O. J. 234 scattered through our sugar district be victimized by the borer. Mr. Rosenfeld claims that the greater amount of fibre in P. O. J. 234 makes the borer tunnels therein less in length than in D. 74, Louisiana purple or striped cane similarly infested. We have, however, seen P. O. J. 234 canes this year bored through from end to end. Mr. Rosenfeld says, along this line:

"In Tucuman, when the P. O. J. canes were first being extended on a large scale, borer infestation was just about as heavy as in Louisiana this year, and we found that, on account of a practically general total infestation with the Purple and Striped canes, it was impossible to make any determinations of varietal infestations when using the stalk as a basis of comparison. Hence, it was decided to use the joints as our units and thousands of joint counts were made by T. C. Barber, then entomologist of the Tucuman Experiment Station, with the following results in percentage of all joints examined showing borer damage in any way:

" 'Native' canes, 41.3 per cent.

"Thin type, 15.6 per cent.

"The writer would hazard a guess that if similar counts were made in Louisiana a very similar proportion will be found to exist, and he is optimistic that as the amount of stubble of the P. O. J. 234 increases the proportional joint infestation will be found to be lower."

Mr. Rosenfeld concludes his article by saying that he has just received a copy of the report of the Agricultural Committee of the American Sugar Cane League, and that he thinks the idea of supplying each purchaser of P. O. J. 234 seed cane with an additional amount of seed necessary to compensate for the varying borer infestation in each case is "certainly fair play on the part of the League". He says, in this connection, that attention should be called to the fact that due to its remarkable germinative potency, P. O. J. 234 will come up to a good stand unless the eyes have actually been destroyed in large numbers, ordinary joint infestation having much less effect on the germination than in the case of D. 74. The whole article should be read by all who have obtained P. O. J. 234 cane for planting this fall.

Data On New Varieties

In the last issue of the Sugar Bulletin we gave some data on the characteristics exhibited by a number of the new cane varieties at the sub-station on the Lafourche properties of Godchaux Sugars, Inc. Mr. Walter Godchaux now sends us for publication some notes made on new cane varieties at the sub-station at Reserve, in St. John parish. These notes were made by Mr. W. J. Wilton, general field manager of the Reserve properties of Godchaux Sugars, Inc., with Mr. D. N. Barrow of the Louisiana Extension Service and Mr. Walter Godchaux acting as his assistants. The notes and comments are as follows:

UBA No top rot. No mosaic. No root rot. Stalk one inch in diameter. Well stooled. Height fair; 5 borers in 17 joints; very little sprouting at eyes or roots.

U. S. 429 No top rot. No mosaic. No root rot. Stalk 1¼ inches in diameter; fair stool; no roots on joints. Little sprouting at eyes or roots. More mature than Uba. Three borers out of 17 joints.

U. S. 534 No top rot, root rot or mosaic. Stalks ⅝-inch in diameter. Long joints. Good stooling. General appearance poor. Hard to shuck. Very long joints. Badly sprouted from roots. Badly bored.

P. O. J. 326 No top or root rot. Badly infected with mosaic. Stalks 1 inch in diameter. Joints 5 inches long. Stooling medium fair. Medium height. Nodes enlarged. Little sprouting of eyes or roots. Well advanced towards maturity. Eight borers out of 18 joints.

P. O. J. 26 No top rot, root rot or mosaic. Stalk about same as Uba. Well stooled, healthy and vigorous. No sprouting at eyes or roots. Joints 6 inches long. Not mature. Three borers in 18 joints.

P. O. J. 979 No top rot, root rot or mosaic. Scant stooling. Stalk 1½ inches in diameter, about 5 feet long. Badly bored; 6 borers in 13 joints. Sprouting at roots but not at eyes; roots from joints.

P. O. J. 139 No top rot, root rot or mosaic. Stalks ⅝-inch in diameter. Well stooled. Vigorous growing; about one-third stalk mature. Little sprouting at joints and roots. Borers, 4 in 10 joints. Joints 9 inches long.

P. O. J. 2379 No top rot, root rot or mosaic. Stalks 1 inch in diameter. Joints 6 inches long. Heavy stooler, growing very tall; little sprouting at eyes or roots. Borers, 3 in 18 joints.

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P. O. J. 213	Badly top rotted. Slight mosaic. Some root rot. Stalk ⅜-inch in diameter and 6 feet long. Fairly well stooled. Sprouting badly at eyes and roots. Borers, 8 to 18 joints.
U. S. 595	No top rot, root rot or mosaic. Stalks ½-inch in diameter. Well stooled. Long joints. Extra height. No sprouting at roots or eyes. An immature appearance.
U. S. 639	No top rot, root rot or mosaic. Stalks ⅝-inch in diameter. Poorly stooled, rusty in appearance. Borers 5 to 18 joints. Badly infested with mealy bugs. A poor-appearing cane.
P. O. J. 228	No top rot or root rot but badly infected with mosaic. Stalk 1 inch in diameter and not great length. Poorly stooled. Borers, 8 to 16 joints. A poor appearance.
U. S. 653	No top rot, root rot or mosaic. Stalk 1 inch in diameter and good height. Well stooled. General appearance vigorous, but very long top. No sprouting at eyes or roots. Borers, 2 to 14 joints.
U. S. 672	No top rot, root rot or mosaic. Stalks ½-inch in diameter, good length. No sprouting at eyes or roots. Borers, 8 to 19 eyes. General appearance not promising.
U. S. 766	No root rot, top rot or mosaic. Stalk 1 inch in diameter. Well stooled and extra tall. No sprouting at eyes or roots. Joints 6 inches long. A vigorous attractive cane, but very immature.
U. S. 1489	No root rot or top rot. Slight mosaic. Stalk ¾-inch in diameter. Good height. Well stooled. Little sprouting at joints or roots. Borers, 5 to 15 joints. Immature and green.
U. S. 1712	No top rot or root rot but heavily mosaiced. Stalk ⅝-inch in diameter. Well stooled. General appearance poor. Borers, 8 to 16 joints.
La. Purple	No top rot but bad root rot and mosaic. Stalk 1½ inches in diameter. Joints uneven length. Fairly stooled. Borers, 7 to 16 joints.
P. O. J. 234	Badly top-rotted and heavily infected with mosaic. No root rot. Stalk ¾-inch in diameter. Well stooled. Fair height. General appearance poor. Borers, 8 to 15 joints.
U. S. 712	No top rot or root rot but plenty of mosaic. Stalk 1 inch in diameter. Fairly well stooled. Fair height. Suckering late and sprouting at eyes. Mealy bug bad. Borers, 8 to 20 joints.
Cayana 10	No top root, root rot or mosaic. Stalk ½-inch in diameter and of good height. Borers, 11 to 20 joints.

The comments on the varieties being grown at the sub-stations on the Godchaux properties, both the above list and the one published in the BULLETIN of November 1, are, in the cases of some of the new varieties, not very reassuring, and portions of the lists sound like a roll-call at the Charity Hospital.

We believe that these reports should be considered very far from conclusive, chiefly because in such a borer year as this no cane can give a satisfactory account of itself. It may be a wise plan to adopt some system by means of which reports on new varieties shall proceed through certain channels where their conclusive or non-conclusive nature will be determined prior to their publication. However, it has been our policy all during the past year to give publicity to any and all information received by us bearing on any of the new cane varieties, and the reports kindly sent in by Mr. Godchaux are published in pursuance of this policy. That the casualty list on the Godchaux sub-stations is not confined to new varieties is shown in the report on Louisiana

Purple, which is listed as having "bad root rot and mosaic". D. 74 is not reported on. P. O. J. 213, one of the canes now permanently adopted in Argentina, where it has had a big share in the salvation of the sugar industry, is reported as "badly top-rotted, slight mosaic and some root rot. * * * Sprouting badly at the eyes and roots". Of P. O. J. 36, the other cane now in vogue in Argentina, the Nov. 1st report says: "As a whole looks very good. Good development and growth. Borer damage slight. Healthy and vigorous looking. No sprouts or roots at joints." Our friend, P. O. J. 234, is reported as "badly top-rotted and heavily infected with mosaic. No root rot". Yet these canes present such a magnificent showing at Southdown that the management of that place expects to plant practically the whole place in them this fall and spring. So let us not attach too much importance to the way the new varieties look on the sub-stations in the unprecedented borer year of 1925.

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THE SUGAR BULLETIN

Entered as second class matter April 13, 1925, at the postoffice at New Orleans, La., under the Act of March 3, 1879.

We stand for the encouragement of Home Industries as against Foreign Competition.

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History Repeats Itself

Mr. Charles C. Krumbhaar, of Southdown, emulating his distinguished predecessor, Mr. Etienne de Bore, is going around nowadays shouting: "It granulates! It granulates!"

He has made sugar out of Cayana cane.

Without prejudicing the case for or against Cayana, which can be officially presented only when the committee appointed by the League to witness the milling test at Southdown on Nov. 23d hands in its report, we take pleasure in adding to Mr. Krumbhaar's delight by publishing in this conspicuous place in the Sugar Bulletin the following letter written to the Management of Southdown by their Factory Superintendent, Mr. F. P. Henchy:

On the 23d of November, 1925, your factory ground 245 tons of Cayana cane and it was my privilege to follow the juices from the mills to the making of raw sugar therefrom. The following is a detailed account.

1st. Cold juices limed to neutrality and heated in closed heaters to 212 degrees Fahrenheit. These juices required about the same amount of lime as our native cane juices and settled very well and re-heated in closed heaters and brought to a blanket in settling tanks and cleared juices decanted. We found no difference in settling of these juices as compared with native juices but found a smaller volume of precipitate.

2nd. The cleared juices through bag filters and to triple effects and evaporated to 28 to 30 degrees without any difficulty.

2rd. Using syrup from Cayana cane alone the pan strike was started at 4 p. m. and at 9:30 p. m. dropped and dried in 40 inch centrifugals to 97.2 polarization with ¾ gallons of water, as compared with one gallon used on regular masse cuites to 96 degrees polarization. Dried freely and sugar was very light in color.

Am glad to comment on the very satisfactory manner in which the products from Cayana cane handled through the entire process.

Yours very truly,
F. P. HENCHY,
Factory Superintendent Southdown.

The granulation of sugar from the juice of Cayana cane is evidently *"un fait acompli."* The sugar is there, in a sack, in fact in a number of sacks. Persons who have rashly bet Mr. Krumbhaar that no sugar could be made out of Cayana are therefore now officially declared losers. Etienne de Bore is said to have sold his initial output for $12,000. We hang that up as another record for Mr. Krumbhaar to shoot at.

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The Producers & Mfgrs. Protective Assn.
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301 Nola Bldg., New Orleans.
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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Mill Test Of P. O. J. 234 Cane And Cayana Cane

As announced in the last issue of the SUGAR BULLETIN, a mill test of Cayana cane and P. O. J. 234 cane took place at the Southdown Factory of Estate H. C. Minor on November 23rd. A great many people were there, many of the larger mills sending their chief engineers, and several cane growers were also in evidence, as they were all interested in knowing how the new varieties of cane would act under ordinary milling conditions. Mr. Jeff Marshall, known as the leading sugar mill designer and expert in Louisiana, was on hand, as was also Mr. Maul of the Fulton Iron Works Co., of St. Louis.

The mill and crusher settings were not changed for the purpose of handling the new varieties. At Southdown they have been milling between 1000 and 1100 tons of home cane per day and the Cayana and P. O. J. 234 canes were sent through with the same adjustment of the rolls that was in use in handling the above mentioned daily tonnage of the native varieties. Much more Cayana than P. O. J. 234 was ground, there being more of it to spare for milling purposes, and in fact the mills operated on Cayana cane for 6½ hours, grinding in that time 245.140 tons. Owing to its hardness, and the compactness with which it lay on the carrier, the Cayana cane had to be passed through with a comparatively light feed to avoid danger of breaking the mill, but the P. O. J. 234 was milled at almost the same rate as the home canes, and, contrary to what has been foretold about it, it lay somewhat bulkier on the carrier than D. 74. The crusher at Southdown, which is an old one built in 1905, handled the P. O. J. 234 in very much the same way that it handled D. 74. There was little indication given that any radical change in crushing and milling equipment will be necessary to handle P. O. J. 234 cane, but this would certainly not hold true of Cayana, nor would it be apt to hold true of P. O. J. 36, which is the hardest of the three P. O. J. varieties now being introduced here. P. O. J. 213 is softer than P. O. J. 234, so that if our present mills will handle P. O. J. 234, they should have no trouble in handling P. O. J. 213. When Dr. Cross was here he said, in answer to a question: "You have some mills in Louisiana made up of a crusher and six rollers. Such a mill cannot handle any cane satisfactorily, in my opinion, but it can handle P. O. J. 234 cane as satisfactorily as any other kind of cane." Here are the figures on the normal juice, P. O. J. 234 cane, as compiled by the U. S. Government chemist at Southdown after the run:

P. O. J. 234 Plant Cane.

Brix.	Sucrose.	Purity.
12.18	8.55	70.20

P. O. J. 234 First Year Stubble.

Brix.	Sucrose.	Purity.
13.19	9.63	72.98

The field yield was 27¼ tons per acre on the first year stubble. Field yield on the plant cane was not reported. The statement was made at Southdown that their D. 74 cane shows sucrose of 9.70. The figures on Cayana cane (normal juice) were as follows:

Cayana Plant Cane.

Brix.	Sucrose.	Purity.
11.25	6.37	56.66

Cayana First Year Stubble.

Brix.	Sucrose.	Purity.
12.67	8.37	66.06

Cayana Second Year Stubble.

Brix.	Sucrose.	Purity.
12.28	8.80	71.66

The field yield on Cayana first year stubble was 35 tons to the acre. The field yields on the plant cane and second year stubble were not reported. Almost all of the run on Cayana was of first year stubble, 224 tons of the 245 tons milled being first year stubble.

The committee appointed by the American Sugar Cane League to draw up an official report on the test has not yet sent it in, but it will doubtless be in hand in time for the next issue of the SUGAR BULLETIN. The committee is composed of Messrs. Edward Godchaux, C. D. Kemper and William Whipple.

Kavengire

Mr. Donelson Caffery recently reported to the SUGAR BULLETIN that Mr. E. A. McIlhenny, of Avery Island, La., had cane growing on his place that had yielded upwards of 100 tons per acre from ninth year stubble. Inquiry of Mr. McIlhenny concerning the cane has brought from him the following letter:

"Dear Mr. Dykers:

"I have yours of November 19th. The cane that I have is an improved form of Kavengire, and is very much more adapted to Louisiana growth than regular Kavengire cane.

"It has taken me more than twenty years to get this cane to the point where it now produces a sure and satisfactory crop. The stubble is never killed, and of the many different improvements which I have made, I have never known the stubble to be injured by either frost or drought. It seems to stand for an unlimited time, and I have one variety, the stubble of which is eleven years old this year, and I expect to produce 100 tons to the acre this year. The sucrose contents of this cane run about the same as D. 74, on actual milling tests made by Mr. Henry Pharr. The cane is proof against mosaic, but seems to be more susceptible to the borer than the ordinary canes.

"Yours very truly,
(Signed) "E. A. McILHENNY."

This Kavengire cane is one of the group of Chinese canes of which Uba is the best known. The group comprises the following varieties, all similar in their appearance and characteristics: Uba, Kavengire, Cayana, Tekcha, Yon-ten-san, Oshima, Khera, Merthi, Kinar, Kikaigashima, Chijucha, Zwinga and "Japanese". All are slender, hard and fibrous, with tenacious leaf-sheaths and large roots. They stool prolifically and stubble for many years. Dr. E. W. Brandes says, of the whole group: "They are not very promising in this country except for syrup production and under rather limited special conditions for sugar production."

Nevertheless Porto Rico is said to have staged its recent remarkable "come-back" as a sugar-producing country largely on "Uba" cane. Most of these canes, including Kavengire, Cayana and Uba, are immune to the mosaic disease. Dr. Stubbs had one of these varieties (Zwinga) under observation at Audubon Park as long ago as 1897 and said of it: "It is extremely hardy, enormously productive under good cultivation, exceedingly woody, difficult to crush, and of a moderate sugar content."

When Dr. Wm. E. Cross, Director of the Argentine Sugar Experiment Station, was here last June he said concerning Kavengire cane:

"It would be very useful because it is immune from the mosaic disease, and while it is not very rich in sugar, it produces an enormous tonnage of cane per acre, which would give a very good amount of sugar per acre as compared with the native cane at the present moment. Kavengire cane does well in black and other land. It is slow maturing cane. If you cut it at the end of October, you will find comparatively little sugar in it, but if you cut it in the middle of December, it will have a very nice lot of sugar in it. It has a high fibre content and is rather hard to grind and has a thin stalk. It is not so frost-resistant as the Java varieties, but it will stand much more frost than the purple or striped cane. I have had Kavengire cane after a freeze of 23 or 24 degrees which came in what corresponds down here (Argentina) to December—and I have analyzed that cane in March and found 83 degrees purity. There is one thing about the Kavengire cane, the leaf sheath adheres very closely to the cane all the way down, so that when you harvest this cane it is not a case of just knocking it with a cane knife and the trash falls off; you have literally to scrape and shave off all the trash. However, we have found you can get away with that difficulty, which is a very serious one, making the cost of harvesting twice as high as it is with the normal purple and striped varieties. We found that you can go in and burn the cane off before you harvest it. We have tried that with native cane and with the Kavangire cane. That reduces the cost of harvesting, for you can then harvest it by simply cutting and topping. There is no very great advantage with a native cane in burning it off, because it is so easy to strip, but the Kavangire is hard to strip, making its cost of harvesting in the ordinary way almost prohibitive."

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For the benefit of those who have not closely followed the efforts now making by the U. S. Department of Agriculture to give us a cane better suited to Louisiana than our so-called "native varieties", it may be well to state that the P. O. J. 234, P. O. J. 213 and P. O. J. 36 are canes bred by the U. S. Department of Agriculture by crossing the pollen of Louisiana Purple and ribbon cane with a cane called "Chunnee" from Northern India, which in its appearance and characteristics is very similar to the other Asiatic canes listed above, but which is especially resistant to cold, the object of this "cross" being to produce a cane that is hardy, resistant to cold and disease like its Northern India parent, but softened and sweetened by the characteristics of its other parent, our Louisiana Purple and Striped.

Borers

"SUGAR CANE INSECT LABORATORY,
"8203 Oak Street.
"New Orleans, La., November 21, 1925.

"Mr. Reginald Dykers,
"American Sugar Cane League,
"New Orleans, La.

"Dear Mr. Dykers:

"Some time ago you called our attention to Messrs. St. Martin & Perret and Mr. P. G. Songy, at Wallace P. O., La., who were operating sugar plantations without growing corn, and for the League you requested that we make an investigation. Mr. W. E. Haley, of this Laboratory, and I have now examined the cane at these plantations, and we can report as follows:

"Going up the road from New Orleans for about forty miles on the west bank of the Mississippi river one reaches Edgard. A few miles farther up is Wallace postoffice. Here one finds a group of three plantations, first, Carroll, where corn is grown in the regular way; second, Evergreen (Mr. Songy's place, where corn was not grown this year, and third, Whitney, where corn has not been grown for seven or eight years, with the exception of an acre or so for roasting ears. It should be pointed out that Whitney is hardly a typical sugar plantation, being largely devoted to rice culture and having some unplanted land. Immediately above Whitney there is no corn or cane.

"As far as possible, similar examinations were made at the three plantations, with the following results:

"Carroll—Corn planted as usual, sugar cane stalk infestation, 100%. That is, we found all stalks of cane bored.

"Evergreen—No corn for a year; sugar cane stalk infestation, 89%.

"Whitney—Practically no corn for years; sugar cane stalk infestation, 84%.

"The experiment is not perfect because there is no separation between the different plantations, and it is very likely that borer moths flew from one plantation to another very freely. Perhaps if no corn had been grown at Carroll the infestation at all the three plantations might have been greatly reduced.

"An experiment like this, from one year at one place, is not necessarily conclusive, but the figures indicate something interesting.

"Mr. Songy believes that it is cheaper to buy corn and raise cane than to raise both corn and cane. Instead of corn, he grows second-year stubble, which he thinks is better for seed than plant cane or first-year stubble. He stated that his tonnage and sucrose yield are fairly satisfactory in a year when the cane borer has damaged the crop severely elsewhere.

"Very truly yours,
(Signed) "T. E. HOLLOWAY,
"Entomologist."

Beets

Mr. D. N. Barrow, special cane agent of the Louisiana Experiment Station Extension Service, writes the American Sugar Cane League as follows:

> "Enclosed please find Sugar Beet Circular No. 3—Directions for Planting Sugar Beets. Also list of those who have agreed to plant the beets this year together with their agreed acreage. A larger acreage could have been secured but this is sufficient for the purpose and it was not thought wise to plant more than was necessary.
>
> "We had thought something of securing a little acreage in the Shreveport, Monroe and Lake Providence neighborhood but it was late, and besides we do not know exactly what effect the greater cold of those sections will have. This we can determine later. It is very possible that we will find that we can plant beets in these sections later, thus have them ripen later, and by shipping in this way lengthen the operating season in the sugar belt proper. One thing at a time, however, is best, so after the present demonstration is proven a success will be time to look into this other matter.
>
> "The beet seed have all been sent out and, weather permitting, should be planted within the next few days. Soil conditions are fine and there should be no trouble in obtaining stands."

Information concerning the proper method of planting beets has been sent out by Mr. Barrow. In the regular beet-growing sections, it is the practice to plant sugar beets in rows twenty inches apart with the land flat. We may eventually find that we can do likewise on well-drained land. On the other hand, should we happen to have a wet winter, there would be danger of the beets drowning, as with rows this close together it is not possible to have a middle deep enough to afford surface drainage.

After thoroughly weighing the matter, therefore, Mr. Barrow decided that it will be best to plant the beets in thirty-inch rows. The ground should have been well and deeply broken. It should be laid off in rows thirty inches apart, care being taken to get the rows straight. A small middle breaker should be used for making the ridges or rows. The rows should not be built too high. After the rows are thrown up they should be leveled off by running a light drag over them. While leveling the tops of the rows this drag will at the same time firm the soil. Few at present have planters that will sow the seed properly. A Planet Jr. garden planter will do it excellently, but in the absence of a proper planter it will be necessary to sow by hand. To do so a small furrow should be opened, not over an inch deep, in the top of the row, being careful to open it straight,

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and then drop the seed into the furrow about one-half inch apart and cover with a very light harrow or brush. It may be necessary to firm the ground with a light roller or drag. If the planting is carefully done, twelve pounds of seed in thirty-inch rows should be sufficient. After planting and covering (rolling) be sure that all quarter drains are well opened.

Some thirty parties have agreed to plant the acreage indicated in sugar beets for the co-operative test being conducted by the Louisiana Sugar Experiment Station for 1925.

The Sugar Bulletin offers its apologies to Mr. Barrow for the delay that has occurred in publishing the above information which he so kindly supplied. Our space is so limited that material sent us often has to be held over from issue to issue, and such has been the case in this instance.

We understand from Mr. J. J. Munson of the Engineering Department of the Louisiana State University, who has charge of the installation of the beet sugar machinery at the Experimental Sugar Factory, that the firms engaged in the production of beet sugar machinery in this country are not in a position to bid on the equipment because of its small size, and Mr. Munson is now preparing detailed drawings and expects to have it built by some local firm from these drawings.

More Cane Varieties Soon Available

Dr. E. W. Brandes, Senior Pathologist in Charge Sugar Plant Investigations, Department of Agriculture, Washington, D. C., was in Louisiana from November 3 to 6 inclusive. He spent a part of two days at the office of the American Sugar Cane League and the balance of the time in the sugar district, chiefly in Terrebonne, Assumption and Lafourche parishes.

Dr. Brandes is the man who said, and still says, that P. O. J. 234 cane will prove a stepping stone to better things in the Louisiana sugar industry. He has looked at the havoc wrought by the cane borer on some of the plots of this cane planted by the American Sugar Cane League, and he has looked at the big fields of it at Southdown, where there are few borers. He unhesitatingly endorses the policy adopted at Southdown of planting the entire property in the P. O. J. varieties this year.

Dr. Brandes went from Louisiana to Canal Point, Florida, where the U. S. Government operates an experiment station where sugar cane varietal work is carried on, and where the American Sugar Cane League has rented and cultivated ten acres of land this year on which are being grown upwards of 300 tons of new varieties which will be available for planting in Louisiana this coming spring. In a letter to the League dated November 17, 1925, Dr. Brandes gives the following descriptive estimate of the quantity and variety of the canes on the League's plot. He says:

"Here is my present guess on tonnage of cane in the League's plot at Canal Point, Fla.:

Variety.	Linear feet of row (Rows 8 ft. apart).	Acreage.	Tonnage on Mar. 1, 1925.
2714 P. O. J.	2400	—1/2	20-25
2725 P. O. J.	1600	1/3	12-15
36 M.	2400	—1/2	20
2727 P. O. J.	1600	1/3	12
213 P. O. J.	8000	—1 1/2	50
36 P. O. J.	8800	+1 1/2	60
234 P. O. J.	18380	4	100-150
U. S. 663	1680	1/3	20
U. S. 429	840	1/6	12
U. S. 576	840	1/6	12
	46540 ft.	9 1/3 acres	318 tons

"Mr. Burguieres will try to visit the plot this week and report separately.

"In haste,

(Signed) "E. W. BRANDES."

The variety P. O. J. 234, of which Dr. Brandes reports there will be from 100 to 150 tons available, has already been absorbed in filling the shortages in this variety that occurred on the League's plots in Louisiana this year, the borer having cut down the expected yields on these plots between 40 and 50 per cent. Of the others, P. O. J. 36 and P. O. J. 213 are the two that the Argentina planters prefer to P. O. J. 234. Neither of these two varieties has so far been available for distribution by the League, which possessed a supply of P. O. J. 234 only. Now it appears that we shall have in the coming spring about 110 tons of these two varieties.

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We stand for the encouragement of Home Industries as against Foreign Competition.

Vol. 4 NEW ORLEANS, LA., DECEMBER 15, 1925 No. 6

A Letter to the Governor

GOVERNOR HENRY L. FUQUA, December 11, 1925.
Baton Rouge, La.

Dear Governor:

Early this week freezing temperatures visited practically every part of the Louisiana sugar district, killing the bud of the cane and necessitating the windrowing of it to avoid its deterioration where more than two or three weeks' grinding is left. The sugar contents of the cane at the time of the freeze was extraordinarily low, as you know, and a further loss of sucrose cannot be contemplated by the members of this organization without dismay.

The purpose of this communication is to acquaint you with the fact that in this grave emergency the efforts of the sugar planters to windrow their cane have been greatly handicapped, and in many cases made impossible, because of the employment of so many laborers on public works by a department of the state government, the Louisiana Highway Commission. All over the sugar district may be seen the distressing spectacle of bud-killed cane standing in the field and deteriorating because no labor can be had to windrow it, while right on the other side of the very fence surrounding it an army of laborers are building state roads, and the planters whose property is thus penalized and endangered are the people who contribute the taxes to pay the laborers who are building those roads.

Such a situation is so full of ironical injustice and seems so wasteful, ill-advised and uneconomic from every point of view, that the American Sugar Cane League appeals to you, as the Chief Executive of our Commonwealth, to put a stop to it at least temporarily. We ask you to use all the power of your official position to bring about a postponement of state highway construction throughout the sugar district for the next four weeks so that one of the most prolific sources of state revenue may be partially conserved from disaster.

It may be appropriate to quote to you in this connection a dispatch from Scottsbluff, Neb., appearing in the public press under date of November 7, 1925, at which time a dangerous early freeze hit the beet fields of that region. The dispatch, which we quote from "Facts About Sugar", says:

> "The entire community is organized into a harvesting machine. Saving of the crop is being made the first order of business in commercial circles, schools, and the community as a whole. The town of Bayard, for example, has taken a census of the able-bodied population willing to serve in this emergency."

Here in the Louisiana sugar district no appeal for community assistance has been registered nor any idea entertained of closing schools to save the crops. That is the hustling, "get-there" way of the West. But it does seem to us entirely out of keeping with every economic principle for thousands of negro laborers to be kept busy building state highways, the construction of which can be delayed four weeks with no ill results, while in the immediate vicinity of their labors the cane crop is being lost for lack of hands to save it, thus enormously reducing the revenues of not only the planters but the state as well.

Will you not act quickly and energetically to change this condition which seems so contrary to common sense?

Yours truly,
STEPHEN C. MUNSON,
President.

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THE
SUGAR BULLETIN
407 Carondelet St., New Orleans
Publisher: The American Sugar Cane League of the U. S. A., Inc.

Issued on the 1st and 15th of each month. Official Organ of the American Sugar Cane League of the U. S. A., in which are consolidated
The Louisiana Sugar Planters' Assn.
The American Cane Growers' Assn.
The Producers & Mfgrs. Protective Assn.
Subscription Price, 50 Cents Per Year.

John M. Rogers, Washington Representative,
810 Union Trust Bldg., Washington, D. C.
Reginald Dykers, General Manager & Editor of the Bulletin,
301 Nola Bldg., New Orleans.
Wm. H. Chaffe, Secretary,
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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Missing Numbers of the Sugar Bulletin

In order to complete a file of the Sugar Bulletin for binding the American Sugar Cane League is in need of the issues of Oct. 1, 1924, and April 1, 1925. If any reader can supply us with these issues we will appreciate the courtesy.

Our Florida Cane not Damaged By Storm

Mr. Ernest A. Burguieres, now residing at West Palm Beach, Florida, has wired the American Sugar Cane League that no damage has been sustained by the League's cane at Canal Point through the recent storm that swept South Florida. Similar advices have been received from Mr. C. P. Sheffield, who has charge of the Federal Experiment Station at Canal Point and from the U. S. Department of Agriculture at Washington through our Mr. Rogers. The amount of P. O. J. 36 and P. O. J. 213 we expect to have available for planting in Louisiana next spring should give from 2000 to 3000 tons of those two varieties for fall planting here in 1926.

Not Burning the Cane Trash Gives Good Results against Borer

EDITOR SUGAR BULLETIN:

As the sugar planters already know, we have previously obtained good results against the cane borer by not burning the cane leaves and tops left after cutting—usually called the trash. A tiny wasp, the native parasite of the borer eggs, probably spends the winter in the trash. Burning the trash would tend to destroy the parasite. But not burning the trash undoubtedly preserves the parasite. In the spring it comes out, lays it eggs in the borer eggs and thus destroys them. A new brood of parasites (instead of borers) comes from borer eggs.

Last winter Mr. John M. Caffery, of Columbia Plantation, Franklin, La., burned none of his cane trash. He writes under date of December 4th:

> "I beg to say that during the last ten years no trash from stubble has been burned on Columbia Plantation. Last season we buried the trash from plant cane also. We did this with considerable misgiving, as we were not sure as to its effect on cultivation. Some of this trash was buried just after cutting the cane, and some not until the following March. But to our pleasant surprise this trash did not bother us in the least in the work of cultivation."

Mr. W. E. Haley and I have now examined the cane on Columbia for borer damage, and on another plantation in the vicinity (where all trash had been burned) we made similar examinations for comparison. The results are:

Columbia Plantation (all trash saved), canes bored 47.6%.

Other plantation (all trash burned), canes bored 96.3%.

Roughly, Mr. Caffery suffers only about half the borer damage that is general this year. In fact, Mr. Caffery judging only from his own fields, has been astonished at the widespread complaint of excessive loss due to the borer.

T. E. HOLLOWAY,
Bureau of Entomology, U. S.
Department of Agriculture.

Errata

THE SUGAR BULLETIN acknowledges the receipt of a letter from Mr. David Pipes, Jr., of Southdown, in which he points out that our unofficial report on the P. O. J. 234 milling test of Southdown, published in our last issue, was in error where it stated that the sucrose test of the D. 74 cane milled at Southdown has been running at 9.70. It should have read 9.00 Sucrose, 70 Purity. Mr. Pipes: "P. O. J. 234 showed up better than D. 74 on both tests."

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The Casualty List

The beet sugar producers in the Northwest declare the present harvesting season to be the worst within their remembrance. Cold and wet weather has made the digging of the beets a nightmare, extremes of temperature from hot to cold, and vice-versa, have made the beet juices difficult to handle in the factories, the sucrose is low, and instead of improving as the season advanced it has got worse and worse. Prices of sugar are much too far down for profit and altogether the situation is harassing and discouraging to both beet growers and factory men.

Hawaii reports prices so low as to be below the actual cost of production at many mills, and out there, where the last word in efficiency is supposed to have been reached, they are stressing the need of "increased efficiency and economy" to meet the situation.

Last, but not least, Cuba, through a member of its Congress, is proposing a subsidy of $7,000,000 a year for three years to help the sugar industry, which is declared to be in a parlous fix! Cane growers and mill owners are at loggerheads and the President of the Republic has been asked to reconcile their differences.

As for Louisiana there is nothing the matter with her but low yields, scarce labor, freezes, low prices and borers.

With losses so general over so much of the world's sugar producing territory it is reasonable to look for changed conditions. There cannot be losses everywhere all the time.

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Mill Test of P. O. J. 234 and Cayana Cane

Official Report Of Committee Appointed By American Sugar Cane League

Reserve, La., December 9, 1925.

MR. REGINALD DYKERS, Gen. Manager,
American Sugar Cane League,
New Orleans, Louisiana.

Dear Sir:

Having been appointed as a committee to witness the mill test of Cayana 10 and P. O. J. 234 cane at the Southdown Factory, Estate of H. C. Minor, on November 23, 1925, we beg to submit the following report, which was made by two of the committee only, as Mr. C. D. Kemper was not able to attend.

There were ground 245 tons of Cayana cane, of which 14 tons were plant, 224 tons first-year stubble and 7 tons second-year stubble. There were also ground after the Cayana cane 20 tons of P. O. J. 234 cane, of which 4 tons were plant cane and 16 tons first-year stubble.

We herewith append a report furnished us by Mr. Charles C. Krumbhaar of the Estate of H. C. Minor at Southdown, giving analyses and other data of the Cayana and P. O. J. 234 canes ground at Southdown Factory on November 23, 1925, and furnishing the test of the normal juices of D-74 and Louisiana Striped canes at that time. This report also gives harvesting data, checked and prepared by Mr. F. D. Stevens, of the United States Department of Agriculture, stationed at Southdown, made in connection with the mill test:

MILL TESTS OF CAYANA AND P. O. J. 234 CANES

November 23, 1925—Southdown Factory—Estate H. C. Minor—Houma, La.

245.14 Tons Cayana Cane Ground:

	Fiber.	Brix.	Sucrose.	Purity.
Cane	14.57	------	7.15	------
Dilute juice	------	9.26	6.09	65.77
Normal juice	------	12.58	8.27	65.77
Defecated juice	------	9.48	6.42	67.72
Residual juice	------	5.30	3.27	61.70
Syrup	------	51.35	34.90	67.96
Raw sugar	------	------	97.20	------

Cane ground, tons	245.140
Mill hours grinding	6.50
Cane ground per hour	37.71
Maceration, per cent cane	36.50
Dilute juice, per cent cane	101.86
Dilution, per cent cane	26.88
Normal juice, per cent cane	74.98
Extraction, sucrose, per cent sucrose in cane	86.73
Sucrose extracted per cent cane	6.20
Sucrose extracted, per ton cane, lbs.	124.00

Cayana Bagasse Analysis:

Moisture average	53.50
Sucrose average	2.74
Fiber, per cent bagasse	42.06
Sucrose, per cent fiber	6.51

The Cayana ground was separated from all other canes and the extraction figures are based on weighed cane, weighed juice and analytical results of the laboratory.

Maceration and Normal Juice calculated, using the predetermined mill factor of .976.

The total Cayana cane ground consisted of plant, first and second-year stubble cane, as follows:

Plant	14.040	Tons	or	5.73%
First-year stubble	224.420	"	"	91.54%
Second-year stubble	6.680	"	"	2.73%
	245.140	"	"	100.00%

COMPARISON OF NORMAL JUICES—CRUSHER AND NINE-ROLLER MILL:

	Brix.	Sucrose.	Purity.	Acidity.
Cayana, first-year stubble, normal juice	12.58	8.27	65.77	1.7
Cayana, second-year stubble, normal juice	12.28	8.80	71.66	1.6
Cayana plant cane, normal juice	11.25	6.37	56.66	1.4
P. O. J. 234 plant cane, normal juice	12.18	8.55	70.20	1.3
P. O. J. 234, first-year stubble, normal juice	13.19	9.63	72.98	1.6
24 Hrs. average juice D-74 and La. Striped (N. J.)	13.00	9.07	69.78	1.5

HARVESTING DATA

Data checked and prepared by F. D. Stevens, Assistant Agriculturist, U. S. Department of Agriculture, Assistant Professor Farm Management, L. S. U.

Cayana and P. O. J. 234 Canes:

	Tons Per Acre.	Per Knife Per Day.	Acre Cost to Strip Man Days.	Dollars.
1. Cayana, first-year stubble, unburned	35.83	.95	37.9	$50.51
2. Cayana, first-year stubble, burned	36.14	1.68	21.5	29.14
3. Cayana, second-year stubble, unburned	32.35	1.52	21.3	30.62
4. Cayana, plant cane, unburned	26.63	1.28	20.9	26.74
5. P. O. J. 234, first-year stubble, unburned	28.15	2.13	12.6	18.85

Note: 1. Men and women stripping all day Friday and Saturday.
2. One-half cut and topped Saturday P. M.—balance Monday.
3. Cut Sunday 9 A. M. to 1 P. M.—men only by task.
4. Cut Monday A. M.—mixed gang.
5. Cut by men only.

In order to grind large tonnages when necessary, the mills at Southdown were set with unusually large openings, both on the receiving and bagasse rolls of the first, second and third mills of their tandem. These settings proved too large to give the best results with either the Cayana or P. O. J. canes when ground at a lesser volume than they would have ground with native canes grinding normally. The opening of the crusher was 3/4 of an inch, of the first mill 11-16 of an inch feed opening with Maershaert grooves and 1/4 of an inch bagasse opening; the second mill 3/8 of an inch feed opening with Maershaert grooves and 1/8 of an inch bagasse opening; the third mill 5/16 of an inch feed opening with Maershaert grooves and iron to iron bagasse opening.

As you will notice by the report furnished us by Mr. Charles C. Krumbhaar, they used a very large amount of maceration, namely 36.5 per cent. This maceration enabled them to obtain sucrose as low as 2.74 per cent in their bagasse, with a comparatively low moisture, which we consider exceptionally good for the settings of the mills and the small quantity of cane being ground per hour on both Cayana and P. O. J. canes. The reason of the slower grinding was that the management of Southdown was afraid of possible breakage of their crusher whilst handling these new varieties.

It is our opinion that both Cayana and P. O. J. cane can be ground satisfactorily with our mills, that is, by our mills which have large enough journals for their diameters and lengths, such as our larger factories have presently installed.

We believe that it takes a crusher and nine-roller mill to grind either of these canes satisfactorily or to give a satisfactory extraction. The crushers of our present type mills are adequate, but crushers of larger diameters and with larger journals which will be able to withstand a heavier weight, either on springs or hydraulics, would be very much more preferable. It is further our opinion that on account of the hardness of the bark of each of these two varieties double crushers would be still more satisfactory.

It is further thought that no one need be afraid of handling these canes in our mills.

From analyses furnished us, the P. O. J. 234, while low in sucrose as compared with normal years, shows fully as good as the average of D-74 and Striped cane ground in the same locality at approximately the same date this year.

Very truly yours,

(Signed) WILLIAM WHIPPLE,
EDWARD GODCHAUX,
Members of Your Committee.

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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Entomology
Washington, D. C.
Southern Field Crop Insect Investigations

Sugar Cane Insect Laboratory,
8203 Oak Street,
New Orleans, La., December 21, 1925.

Mr. Reginald Dykers,
American Sugar Cane League,
New Orleans, La.

Dear Mr. Dykers:

I am sure that sugar planters, as well as scientific workers must endorse the progressive action of a committee of New Orleans bankers in issuing a circular on the control of the cane borer.

At your request, I have the following comment to make concerning the advice to burn cane trash late instead of plowing it under.

The first evidence of the borer in the spring is not found until the fields are covered with small green plants, around the first of May. The parasite does not show up until some weeks later. Consequently, it would seem that there is danger of killing the parasite unless the trash burning is done when the crop is well advanced, and in that case there would be greater danger of injuring the plants by the fire.

It is my opinion that there is little or nothing to be gained by burning the trash in the late winter instead of during the grinding season. I have occasionally examined fields where late burning was practiced, but without any beneficial effects.

The bankers advise burning only if leaving the trash is altogether impossible. It is not impossible, and it is not even very expensive—but it is some trouble. Nothing is accomplished without some effort.

I might say that I am becoming more and more impressed with the necessity for real interest on the part of the sugar planters if the cane borer is to be controlled. By interest I mean the realization that borer control can only be accomplished, first, by adequately supporting scientific investigations, and, second, by adopting the findings of these investigations at a probable expense of considerable effort and money.

Very truly yours, (Signed) T. E. HOLLOWAY,
Entomologist.

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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

L'Anné Prochaine Is Here

Today is New Year's. Since the last one the earth has travelled some 570,000,000 miles through the infinite and awesome solitudes that wrap the spheres. In the meanwhile we have all clung to it, along with the ants, oysters and cane borers and most of us have nursed the idea that we and our affairs are of considerable importance.

We celebrate the New Year on January 1st because Pope Gregory XIII, whose calendar we follow, fixed things that way. Julius Cæsar fixed up a calendar that began on January 1st, too, but after he had been honored for his achievement by having the month of July named after him it was found that his year was too long by eleven minutes and fourteen seconds. Nevertheless some countries, like Russia and Greece, still use the calendar of Julius Cæsar, and as a result are by this time getting their New Year's about two weeks late.

New Year's day is ordinarily distinguished by the adoption of resolutions. Most of them are promptly broken; but that we realize our imperfections and admit that we should correct them is better than nothing. What shall we who are engaged in the Louisiana sugar industry resolve today?

Suppose we make a little resolution—and stick to it just as long as we can—that during 1926 we will notice, and talk about, all the good things that happen to us. We have been going the other way around since time immemorial, and have not achieved any outstanding success nor been very happy, so let's test Pollyanna's medicine. Instead of keeping silent when the weather is exactly right and loudly complaining to high Heaven whenever it is wrong, let's talk a lot about how fine it is when it *is* fine, and say nothing when it isn't. When we get the breaks in the game, let's give three cheers and a tiger. When some things suit us and other things are just the opposite, which is the case most of the time in everybody's life, let's brag about our luck and tell the world we're very much all right.

So, now, we're off! We shall not see much of the scenery of the trip—deserts floored with star dust, and the canyons of the comets. As passengers on the Almighty's own non-stop express we shall go roaring by Aphelion and Perihelion, great stations on the way, and never know it. But at least let's see to it that they hear us cheering.

Yeah! Louisiana!

The Cane Borer

The sugar cane borer in the United States has been developed into a serious pest. It was brought from a foreign country, where it had a vigorous natural enemy, into the United States where its natural enemy does not ordinarily get into action until well into the growing season.

In the United States, the cane borer has as an enemy a little wasp parasite. This parasite does a great deal to keep down the numbers of the borers, but as in the usual course of events, it comes into the field so late the borer is well established in the stalks of the cane. This can be helped out a great deal if the planters will make conditions as favorable as possible for the propagation of the parasite. This could be done if the following things were well understood:

The cane borer lays its eggs on the leaves of the cane. This is where the parasite gets a shot at the borer. The parasite deposits its eggs in the eggs of the borer. The larvæ of the parasite hatch out and live in the borer eggs; this destroys these eggs. Now if these eggs containing the parasite larvæ and eggs could be saved in the late Fall so that they would hatch out in the Spring, it would enable the parasite to get into action before the borer had become well established in the cane. This can be easily done if the right methods are used.

At the present time, the cane leaves which contain these eggs are burned when the cane is cut. This destroys the eggs. If instead of burning them the leaves and trash were turned under, the parasite eggs will go through the Winter undamaged and hatch out egg-laying parasites in the Spring. This would tend to nip the trouble in the bud.

In the Spring when the borer moth hatches out, it deposits eggs on the first green thing that it sees which is the same type of plant that cane is. We can fool Mr. Borer by planting corn along the ditch

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banks and in between the rows of cane; this comes up before the cane. As this is the best hostplant to be found this early in the Spring, the first crop of borer moths lay their eggs in it. When the corn has grown to be about three feet high, if it is cut and fed to the stock, the nucleus of a big cane borer infestation will have been destroyed; consequently, there will be very few borers in the cane.

The cane borer itself goes through the Winter in a state of hibernation either in the stalk of the seed cane or in high cut stubble. The borer is then in the larvæ form. If the stubble was cut flush with the ground, one of the borers' Winter resorts would be destroyed. This would help to diminish their number.

Now, when seed cane is full of borers when planted, it can be easily seen that the cane crops will be very apt to be full of borers. It is therefore, very desirable to get borer free or nearly borer free seed cane. This cane be done by selecting the seed in the following manner:

Go through the different fields and examine one or two hundred stalks promiscuously. That is, examine stalks about six or seven paces apart down each row. Do not try to pick out either bored or borer free stalks; just take them as they come. If fifty stalks out of every hundred are found to be bored, this cane should not be planted. If twenty or a smaller number of stalks out of every one hundred are found to be bored, the cane may be planted without very much borer damage.

If no cane that is practically borer free can be found, the borers in the seed cane can be drowned out. This can be done, by soaking the cane in water for seventy-two hours. This cane must be totally submerged. In localities where barges are used to transport cane, this can easily be done by filling the barge with cane and then pumping the barge full of water. The cane must be weighted down to keep it from floating. At the end of seventy-two hours, the surface of the water will be carpeted with dead borers. In localities where barges are not used, the cane may be soaked in tanks or even in ponds. On many places however, this is difficult or impossible to do, owing to the situation of the plantation.

If these recommendations are carried out, say the Federal entomologists, very little damage will be done by the cane borer.

Cuba For The Cubans

We read in the daily press that six American chemists, arriving in Havana December 23rd to take positions in sugar factories in Cuba, were prohibited from entering the island on the ground that Cuba is for the Cubans, and that there are Cuban chemists available for the work. It seems that a law recently passed by the Cuban Congress makes this action *de jure* and the lynx eyed immigration officers at the Port of Havana are making it *de facto*.

Cuban for the Cubans is something new. Hitherto it has been Cuba for the Neoyorkinos, as they call them down there. The little episode of the chemists leads us to sniff the air and fancy we can detect a slight odor of self-respecting proprietorship emanating from the Cuban people.

Barring out six American chemists so that Cuban chemists may have their jobs is of course a petty

matter, and is like shooing a few little flies out of the Augean stables. But it is at least a gesture.

It isn't exactly logical for Cuba to ask the American Government for special favors in the way of tariff concessions and in the same breath tell American citizens applying for work to begone from her shores. To understand this inconsistency one must understand that there are two Cubas, the real and the synthetic. The real Cuba wants to work out her own salvation in her own way, with her own sons and daughters. We do not believe the real Cuba wants any favors from the United States. The synthetic Cuba wants a big balance in a New York bank, one particular bank being a prime favorite, and nothing else in particular. If in order to get it, it should become necessary to sacrifice all the sons and daughters aforesaid it would be done with the same noble unconcern with which Mark Twain offered to sacrifice all his wife's relations.

"Cuba for the Cubans!"

It may yet be.

Can We Pin This On the Ant?

The communication below from Mr. John A. Pharr is interesting and is printed with the expectation that both sugar planters and entomologists will favor us with expressions of opinion on the subject for publication in the next issue of The Sugar Bulletin.

So far as the Argentine ant is concerned it ought to be exterminated on general principles, for it is known to be guilty on various other counts even if it is not responsible for the extraordinary prevalence of the borer. The extermination of the ant presents no such difficult and unsolved problem as we are faced with in the case of the borer. It is quite generally known that the ant can be got rid of by using poison compounded according to the U. S. Government's official formula. Mr. Pharr says:

Berwick, Louisiana,
December 24, 1925.

Mr. Reginald Dykers,
New Orleans, La.
Dear Sir:

I was in Mr. LeBourgeois' office Monday afternoon when he telephoned you asking how we could get in touch with Mr. Holloway, the entomologist.

I had been talking to Mr. LeBourgeois about the ravages of the borer and said that in my opinion it might be well for the scientists to look into the habits of the Argentine ants and see in what way they were connected with the borer.

I read with much interest the recommendation of the Committee headed by Mr. Pool and think we should all carry out their wishes in not burning the trash and making necessary nests for the parasite.

My reason for thinking that the Argentine ant may be largely responsible for the great increase of borers during the last two years is because we have noticed in this section the great absence of the ordinary wasp and know that the ant invades their nests and destroys the larvæ. We also know that the dirt dauber has been almost exterminated due to the attacks of the ant. They bore holes in the dirt dauber's nest and destroy the young.

Since this is the case and since the parasite is a wasp, although much smaller, is it not possible that the ant has helped to exterminate the parasite? This may be just an idea but I hope that you can have some investigation done along this line.

This ant does untold damage to all plant life and should be exterminated on general principles but more especially if it has anything to do with the destruction of our sugar industry. It interferes with the increase of birds by getting into the nests and making it so uncomfortable for the mother bird that she can not hatch out her young.

We also know that it enables the mealy bug to do its damage, especially to the cane, before and after it is planted.

I have observed that our canes on the front highlands are much worse bored that in the lowlands that are subject to being flooded one or more times during the year, which would make the highlands a better breeding ground for the ants.

I am taking the matter up with you knowing that you will use your influence to have the question investigated.

Very truly yours,
(Signed) JNO. A. PHARR.

Cayana Cane Tested For Syrup Making

Songy Sugars Co., Inc., owner of Evergreen Plantation at Wallace P. O. in St. John Parish, has been conducting a mill test on Cayana cane, for syrup making. Mr. Songy has sent the SUGAR BULLETIN a report on this test, as follows:

CAYANA CANE NO. 10

Cayana Cane No. 10, obtained from Southdown, was ground at Evergreen Factory, on Saturday, December 19th. This cane had been cut about ten days before grinding, with no deterioration, or very little, as shown by the mill extraction and laboratory analysis.

The cane showed higher acidity than results obtained in tests made at Southdown on November 23rd, but I would not blame the length of time between cutting and grinding for this. The purity is lower in this case, which can be attributed to the amount of plant cane which I think formed 50% of the cane ground. We notice that the purity in the plant cane at Southdown on November 23rd was as low as 56.66. This cane was sound, had no appearance of being damaged by the freeze, except that the buds were killed. The cane had a few borers, but an interesting fact was that wherever a borer was found not more than three or four inches of the cane was affected; whereas, in the home cane, practically the whole cane is.

The mill took the cane exceptionally well. We started with a small feed but before the end of the test we had a full load going through at practically the same speed as when grinding home cane.

The juice had a very good color and taste. The

writer, having no experience with this particular kind of cane, had to almost guess at the clarification to use to make the desired syrup; and having only one and a half tanks full of juice to work on made the problem still harder to solve. I made the syrup so as to contain no sulphur in the finished product, with a view of getting a syrup that would come near or even match A-1 Georgia Cane Syrup. The resulting syrup fell a little short of A-1 Georgia Syrup, but it is the wirter's firm belief that if he had about fifty to seventy-five tons of that cane he could match Georgia Cane Syrup absolutely in taste, body and color.

The syrup obtained from this test is superior, in the writer's opinion, to that made with home cane. The number of gallons of syrup per ton of cane is higher than would be expected from the analysis of the normal juice, and would have been one to one and a half gallons more had it been possible to saturate the cane at milling.

I would recommend that at least three car loads or seventy-five tons of that cane be obtained, if possible, so that a more thorough investigation can be made into the quality and quantity of syrup that can be made with this new variety of cane.

Below is shown the tabulated results of the test:

CAYANA CANE

Ground Saturday, December, 19, 1925

Five-foot Birmingham Mill with Crusher.

Tons of Cane	14.51
Tons of Normal Juice	10.260
Gallons, Normal Juice	2,399.6
Extraction	73.2

Juice Analysis

Bx.	Suc.	Pur.
12.7	7.94	62.51

Normal Juice Acidity	2.3
Sulphured Juice Acidity	2.7
After Liming	2.4
Time Grinding	40 minutes
Rate of Grinding	21.7 tons per hr.
Syrup obtained	296 gallons
Gallons per ton	20.39

(Signed) C. G. SONGY, Chem.
P. G. SONGY, Mgr.

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As the Twig Is Bent the Tree's Inclined

The President of the American Sugar Cane League, believing that the young boys and girls in the High Schools in the Louisiana sugar district ought to be familiar with the leading industry of their section, and that they should gain a personal insight into the process of sugar manufacture, caused the following letter to be addressed some weeks ago to the Principals of the various High Schools in all the sugar parishes:

Dear Sir:

Under instructions from the President of the American Sugar Cane League, Mr. Stephen C. Munson of Napoleonville, I am writing you for the purpose of suggesting that the High School pupils of both sexes in the sugar producing Parishes of the State, be afforded an opportunity to become familiar with the interesting process of sugar manufacture.

The production of sugar, syrup and molasses in Louisiana amounts normally to a value of between $30,000,000.00 and $40,000,000.00 and is exceeded in value only slightly by cotton in the list of our State's agricultural products. The young people in the High Schools in the sugar Parishes now have an opportunity to witness the production of this important staple product of their own home State, as grinding operations are now in progress and will continue generally for the next two weeks. That they should be conversant with so large and important a local industry seems to admit of no argument. The suggestion of our President is that you arrange with the owners of some one or more sugar factories in your Parish to have the pupils in the High School, under your jurisdiction, visit one of these establishments where they may see just how sugar is made and have the process explained to them and that the pupils be then required to write a little paper or thesis on the subject.

May I ask you to consider this suggestion favorably? I am sure that, if carried out, it will prove both a pleasant and an instructive step and I hope that it will meet with your approval.

Yours truly,
REGINALD DYKERS,
5th Vice-President and
General Manager.

The Platt Amendment

Here is an utterance credited to the President of Cuba by the Literary Digest:

"Cuba admires the United States and knows her acts are based on the great principles propounded by such eminent leaders as Washington, Lincoln and Roosevelt, whose names we respect and admire. A nation having given birth to men of such high ideals will surely understand and sympathize with our great aspiration, which I may fairly sum up in these simple words: Abrogation of the Platt Amendment."

Commenting on this the Havana Heraldo says:

"Cuba is fundamentally dependent on the United States in two ways: In the Platt Amendment, which hurts our liberty; and in our economic subservience. The first is a treaty that may be renounced by the Government of the United States as soon as the latter become convinced that we do not need it to behave correctly in the concert of civilization. *We shall achieve liberty in the second instance when the capital invested in Cuba becomes Cuban.*"

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The Borer Warfare

The committee composed of Mr. L. M. Pool, Chairman, Mr. C. F. Dahlberg, Mr. Jacob Moog, Mr. R. C. Watkins and Mr. O. B. Webb who sent out a carefully prepared circular some weeks ago containing recommendations designed to arrest the progress of the cane borer, has received, from the 1200 circulars sent out, 86 replies. Each circular contained a postal card, to facilitate reply, and on this card were printed the six recommendations of the committee with a request that those answering check the recommendations that they would follow.

A digest of the 86 cards received shows that 60 men out of the 86 will adopt the recommendation that hibernating piles of cane trash be built in the fields for the winter protection of the wasp parasite. Only 58 out of the 86 agree to adopt the most important of the committee's recommendations, namely, that the cane trash be not burned. A few explain that they would have refrained from burning the trash had they received the circular letter sooner, but had already burned it when the letter arrived. Sixty-five of the 86 agree not to burn the cane trash until late in the spring, many of those indicating this intention being among those who also indicated that they would not burn it at all, so the exact number who will act on the recommendation not to burn the trash at all is indeterminate.

Mr. T. E. Holloway, Federal Entomologist, published a statement in the last issue of the SUGAR BULLETIN in which he decried the late burning of the trash as useless and urged that it be not burned at all if good results were to be obtained.

Eighty of the 86 replies say they will always cut cane close to the ground. Everybody tries to do that, regardless of the borer question. Sixty of the 86 agree to gather up all loose cane around the mill, hoists, etc. Seventy-four of the 86 agree to plant some early corn on the ditch banks as a borer trap and cut it and feed it to the stock when it is about 3 feet high.

Eighty-six promises to do at least one or more of the things urged by the committee is just that much clear gain. It may seem like a small percentage of answers, 86 from 1200 letters, but perhaps the leaven is working, even in some of those who used the return postal card to write to the nearest bank for a loan to repair the ravages of the borer.

Even when we place the most hopeful construction on the matter, however one disconcerting fact obtrudes itself, and that is that some 1114 sugar planters, apparently had very little perception of the importance of the cane borer circular. That 1114 of the 1200 men to whom it was sent ignored it can scarcely make other than a disappointing impression. Their refusal to reply, although a postal card was enclosed for the purpose, may logically indicate to the committee that they are not interested enough in any effort to control the borer to lend their aid and co-operation.

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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

THE BORER WARFARE

(Continued from 1st page)

In spite of this apathetic attitude it is very probable that Dr. Holloway and the State entomologists who are naturally going to persist in their attempts to control this pest in spite of all discouragements, will find that the ice is broken a little. They may now point to the fact that representatives of the banks, railroads and other big interests here are standing solidly behind their recommendations. All in all the sugar planters owe a vote of thanks to Mr. Pool's committee and in expressing this view we feel sure we echo the sentiments of all concerned.

The Ant

In the last issue of the SUGAR BULLETIN we published a letter from Mr. John A. Pharr in which he expressed grave apprehension that the Argentine ant has been destroying the little wasp parasites that are the enemies of the cane borer. We expressed the expectation, when we printed Mr. Pharr's letter that other sugar planters and the entomologists would furnish us with their views and experiences on this subject for publication in the present issue. Mr. T. E. Holloway, the U. S. Government entomologist at New Orleans has favored us with the communication which we print below, but we have not heard from anybody else. Mr. Holloway writes as follows:

"Dear Mr. Dykers:

"I read with interest the letter from Mr. Jno. A. Pharr in the last issue of THE SUGAR BULLETIN, and as you request I am glad to give such information as we have concerning the influence of the Argentine ant on the egg parasite of the cane borer.

"Mr. Pharr argues that the ant may attack the parasite, which is something on the order of a wasp, because he has found the ant invading the nests of the ordinary wasp and destroying the young. Our observations confirm this theory to some extent. We have sometimes found the ant feeding on borer eggs which have been parasitized—that is, the ants were feeding on black eggs in which the young parasites were developing. While the ant may thus destroy some parasites, we doubt whether very much harm is done. The parasite seemed to be abundant everywhere last fall, in spite of the occasional attack of the ant.

"The Argentine ant does encourage the sugar cane mealybug and other insects which the ant propagates, and in the same manner it attends a louse on sugar cane and various lice and scale insects on other plants. The best way to control the ant, and thereby the mealybug and other insects which the ant propagates, is by the use of the poison which was perfected by the Bureau of Entomology at Audubon Park. For a long time there was the objection that this poison could be prepared only by a skilled person, but it is now manufactured by several firms in New Orleans and elsewhere, and can easily be obtained in any quantity.

"For treatment of sugar cane fields, the tin cans containing the poison should be hung in the fields on stout sticks firmly pushed into the ground. These should be placed on top of the rows, so that they will not be damaged in the cultivation of the cane by the plows and harrows. If two stout stakes are hammered into the ground a few inches apart, a little board nailed on top, and the can of poison hung between the stakes, the can will be fairly well protected from any accidental injury.

"Mr. E. R. Barber, who worked on the Argentine ant, recommends the use of about 25 cans to the acre, the cost per acre being something like one dollar. Now is the time to place the cans in the fields.

"It is probable that the field men on a plantation will remember where the mealybug was worse, and if it is not desirable to treat the whole plantation the cans can be placed only in the fields which were badly infested. It is probably not necessary to call the attention of the planters to the fact the mealybug

is the soft, fleshy insect which surrounds itself with a quantity of a white substance something like cobwebs. This gives it the name of the 'mealy' bug. Each bug is equipped with a short beak, with which it punctures the rind of the cane and sucks out the juice. The mealybug congregate around the eyes of the stalks, and they often seriously injure the eyes so that the germination is impaired. They attack not only the growing cane but also the planted stalks and the cane in the windrow, sucking the juice out during the warmer periods of the winter.

"We have always advised the control of the ant on account of its protection of the mealybug, and such harm as it does to the egg parasite gives an added reason for the use of the cans of poison.

"Very truly yours,

"(Signed T. E. HOLLOWAY,

"Entomologist."

The Old Order Changeth

The public press has lately announced the proposed conversion of the Belle Alliance and Evan Hall plantations into forty-acre farms, on which are to be produced fruits, vegetables and milk. The iconoclast who plans this sacrilege is Mr. H. N. Sherburne of Plaquemine. We use the word sacrilege in a Pickwickian sense, of course. It is no sacrilege to try to make properties pay that have not paid in recent years, and if in witnessing the methods employed some sentimental people drop a sympathetic tear, what matters it?

In Louisiana's sugar garden Belle Alliance and Evan Hall were once fair roses. None exceeded them in colorful bloom; none exceeded them in that fragrant aroma that is the special child of luxury and well-being. Those who owned them stepped high and proudly, as well they might.

But bye and bye Mr. Kock and Mr. McCall went over the river to rest under the shade of the trees. The desecration of decay crept insidiously here and there.

Now Mr. Sherburne plans to plant potatoes where for more than a hundred years the royal fronds of sugar cane have waved and dipped and nodded pridefully. He will criss-cross with some two hundred fences the vast, green sweep of acreage that once was Evan Hall and Belle Alliance. Instead of a stable full of gaited horses bearing brisk and hurrying managers and overseers hither and yon he will have stalls of peaceful cows, chewing the cud.

According to the published statements, not a farm will be sold until an efficient and modern selling organization is created and in full swing to market the produce scientifically, a canning and dehydrating plant erected to take care of the situation when the produce must be held for better prices, and 10 fine cows are duly installed on every farm. The farmer will just have to buy it all and then go ahead and prosper.

The old order changeth; that is the way of the world.

But we wonder a bit whether—

If given a high grade, efficient, up-to-date selling organization such as Mr. Sherburne concedes is necessary in the case of fruits, vegetables and milk;

If given every facility and accommodation for holding the output when necessary as Mr. Sherburne concedes is necessary in the case of fruits, vegetables and milk;

And if given 10 good mules in every stable, all paid for and ready to work, instead of ten good cows—

The 8000 acres of Evan Hall and Belle Alliance might not produce bigger returns from sugar cane than from fruits, vegetables and milk?

Sugar cane, treated like Cinderella sitting among the ashes, may not be as attractive as some other things treated like Cinderella in her coach and four. But if treated the same—how might that turn out?

Figures and Statistics

The "Cuban Review," which is published by the Munson Steamship Line, issue of December, 1925, contains on page 11 a rather threatening statement to the effect that the present United States tariff on sugar may "put an end to the present commerce between Cuba and the United States, amounting to over $500,000,000 annually". On page 13 of the same issue, in another, article by the same author, we read that the commerce between Cuba and the United States consisted for the year 1925 of $362,264,908 of United States' money that went to Cuba and only $191,570,876 of Cuban money that went to the United States.

The argument is supposed to be that it will be to the advantage of the United States to pay $362,264,-908 to the Cubans, chiefly for sugar, in order that the Cubans may spend $191,570,876 in the United States for various articles.

If the commerce stopped, as threatened by the writer of the article on page 11, it appears to the casual reader that the United States would be $170,-694,032 per annum better off.

As to tariffs, people who live in glass houses should not throw stones. In the November issue of the World's Work Mr. Henry Kittredge Norton has this to say about Cuba's own tariff:

"Cuba's population numbers about three million. These pay the Government through the Customhouses $30,000,000 to $45,000,000 per annum or $10.00 to $15.00 per capita, three or four times the figure for the highly protected United States. Nor are the Cuban duties paid by the rich on luxuries alone. The bulk of Cuba's imports consist of food and clothing for her common people."

Our Cane in Florida

As the time approaches for moving to Louisiana the cane being grown in Florida by the American Sugar Cane League, preparations for handling it and growing it here are nearing completion. It is expected that there will be available some 50 tons of P.O.J. 213 and about 60 tons of P.O.J. 36, which are varieties that have already been released for distribution. There will also be somewhat over 100 tons of P.O.J. 234, and the bulk of this will be used in filling the shortage caused by the lack of the expected tonnage of this cane on the League's 52 plots in Louisiana last fall. The available tonnage of P.O.J. 213 and P.O.J. 36 will be planted in Louisiana and grown for account of the League, arrangements hav-

ing been completed with Godchaux Sugars, Inc., J. M. Burguieres Co., Lim., The Standard Sugars Co., and the Cinclare Central Factory to grow the cane with the understanding that 20% of the crop and all of the stubble is to be allotted to the growers in return for their services and expenses in growing the crop. With ordinary good fortune the League should have available for distribution in the fall of 1926 about 2000 tons of P.O.J. 36 and P.O.J. 213. Other varieties will likewise be received from Florida and grown, including some 20 to 25 tons of P.O.J. 2714, a most promising cane, and about the same quantity of M. 36, another cane of very high promise and which it is very possible the U. S. Department of Agriculture will shortly release. All these canes are the property of the League, having been grown by the League on land rented by it in Florida near the Experiment Station of the U. S. Government at Canal Point.

Human Health and Sugar

Some weeks ago Mr. Stephen C. Munson, President of the League, sent to THE SUGAR BULLETIN an article entitled "The Place of Sugar in the Diet," by Alonzo Englebert Taylor, published in "Hygeia," November 1925 issue, which he thought we might like to reproduce. As this issue of the BULLETIN is not overcrowded with matters requiring immediate publication we are taking advantage of the opportunity to comply at least partly with the suggestion of Mr. Munson by republishing portions of Mr. Taylor's interesting article. The entire article exceeds our space limit in this issue.

Mr. Taylor begins his article with the statement that: "Foodstuffs are of two kinds: maintenance foods and fuel foods." Under maintenance foods are included those that sustain tissues, contribute growth, maintain intracellular composition and metabolism (tissue change), and support upkeep. These maintenance foods contain the indispensable factors of the diet—the balanced protein, vitamins, and mineral salts. The fuel foods provide the energy for body heat and physical work. Naturally, the two groups overlap somewhat; foods rich in the indispensable factors of the diet contain also fuels; foods comprised primarily of fuels contain often a certain amount of the indispensable substances.

A quart of milk and 400 calories' content of fresh fruits and green vegetables (such as are freely available in this country), containing together 1,000 calories, supplies all the indispensable factors of the diet for one person each day.

The remainder of the diet, including meats, cereals, oils, and fats, staple vegetables, and sugar, some 2,600 calories per day, supplies the fuels required for support of body heat and physical work.

Such a segregation of the diet is entirely practicable in all portions of the United States.

Sugar is a fuel food. The place of sugar in the diet is concerned with the relation of sugar to other fuel foods and has nothing to do with the relation of the fuel foods to the maintenance foods. Maintenance foods are purchased on the basis of value of essential nutritional qualities. Fuel foods are purchased on the basis of climatic temperature, environment, physical work, taste, custom, convenience and price.

* * * * *

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We have two kinds of consumption of sugar. One demand is inelastic, resisting rise in price, and this form of demand leads to hoarding in periods of scarcity or high prices. With the other kind of consumption of sugar, demand is elastic, consumption rises with low price and declines with high price. Probably the consumption of sugar in manufactured form is more elastic than that of refined sugar on the table. The present huge world crop of sugar is being consumed because sugar is now a relatively cheap food.

Sugar at present supplies about 500 calories per person per day, corresponding to an intake of a little over 100 pounds per person per year. In other words, about 19 per cent of the present intake of fuel foods is in the form of sugar. Sugar has five distinct uses in the diet. It is:

1. A conserver of foods.
2. A flavoring substance.
3. A satiation factor.
4. A staple fuel.
5. An emergency fuel.

It is impossible to indicate how the 500 calories per person per day are divided among these five separate services that sugar renders. We do no know how household purchase of sugar is divided between straight sugar and sugar in manufactured or compounded form.

* * * * *

The conserving influence of sugar is utilized in the preparation of many food products, especially fruits. Suspended in a sugar concentration of certain strength, fruits are resistant to decomposition. Sugar is also employed in the curing of meats and of other foodstuffs. Of course, the foodstuffs now conserved with sugar could be conserved in other ways, but sugar represents a form of conservation hallowed by custom and adapted to the taste of inhabitants of the temperate zones.

The employment of sugar as a flavoring agent is so widespread as to require nothing more than mention. It is, however, important to realize that the consumption of fruit depends to some extent on the consumption of sugar. One of the most praiseworthy developments of the modern diet lies in the expansion of the use of fresh fruits. This expansion has been contingent on the free availability of sugar at low price.

Two prominent causes of increase in consumption of sugar during recent years have been the expanded use of fruits and the contracted use of alcoholic beverages. Sugared drinks have been widely employed to replace alcoholic beverages.

* * * * *

The use of sugar as an emergency fuel depends upon its rapid resorption. Sucrose (the scientific name for ordinary sugar) is split into d-glucose and d-levulose. The former is absorbed directly; the latter is converted into d-glucose in the act of resorption. The process of resorption is so rapid that sugar appears in the muscles (the firebox of the body) within a few minutes after ingestion. Practical experience has confirmed experiment in this regard, and sugar is widely issued as an emergency ration for soldiers, explorers and forced-draft workers of all kinds, including athletes.

* * * * *

A large proportion of persons over 40 are overweight. The attempt has been made to associate this overweight with the present high sugar intake of the country. This is an unsound inference. The state of being overweight is the result of an excess of calories in toto and not of an excess of calories of a certain source.

* * * * *

Sugar was once a luxury in the temperate zone, an exotic tropical product. It is now a necessity of commonest kind, produced in the temperate as well as in the torrid zone. As a luxury, it was long subjected to excise tax, on the theory that it was a luxury on which the well-to-do could afford to be taxed. It is now so cheap in price that it is widely regarded as a source of revenue, and taxes are placed on it on the theory that it is so cheap that an added impost will not be felt.

In some plants the process of assimilating carbohydrate is finished at the stage of sugar; in others it proceeds to the state of starch. The chemist has discovered how to retrace the process and the result is the manufacture of glucose from starch. Glucose has practically the same fuel value as sucrose (both as a staple fuel and as emergency fuel), but is inferior as a conserver, a flavoring substance and a satiation factor. There are uses in the diet and in the manufacture of compounded foods in which this inferiority of glucose becomes a positive advantage.

The consumer has the right to know which kind of sugar he buys. Since glucose is apparently destined to achieve a wide use, sugar-containing foods should be labeled either according to the chemical name or the natural source. If labeled according to the chemical name, the labels would read, "containing sucrose"; "containing glucose"; "containing invert sugar"; "containing lactose." If labeled according to the source, the labels would read: "containing synthetic corn sugar"; "containing cane sugar"; "containing beet sugar"; "containing milk sugar".

In conclusion, it would seem to be a matter of indifference, from the nutritional point of view, whether the sugar consumption falls to 90 pounds per person per year or rises to 110. The place of sugar in the diet of the population is determined by taste, custom, convenience and price, and it lies, for practical purposes and within reasonable limits, outside of the domain of discussion of nutrition.

The Appetite

When President Coolidge announced his decision last June, to the effect that he was not warranted in lowering the tariff on sugar, as had been petitioned by the organization representing the United States refiners, the owners of Cuban sugar plantations, the National City Bank of New York immediately issued the following statement:

> "Because of the relatively low price of sugar and the relatively high tariff of 2.2 cents per pound on all foreign raw sugar except Cuban raws, it is clear that receipts of full duty sugars will be as small as in other years of low prices. For this and other reasons, all connected with the tariff which the President refuses to reduce, an early increase in prices may be expected by American consumers."

Since this prophecy by the largest Wall Street financial institution the course of sugar prices has been thus:

June 12 (two days before the President issued his decision)..	Cuban Raws		4.40
One month later	"	"	4.27
Two months later	"	"	4.37
Three mouths later	"	"	4.15
Four months later	"	"	3.83
Five months later	"	"	4.02
Six months later	"	"	4.08
At this writing	"	"	4.11

The National City Bank of New York is the Deus ex machina of Cuban finance. There are no Cuban banks left in Cuba. They are all gone. Likewise there are few Cuban sugar planters left in Cuba, and those few will soon be all gone, too.

The National City Bank has not accumulated assets of over a billion dollars by making honest mistakes and miscalculations. We do not believe that, in their financial wisdom, and with the access they have to innumerable sources of information, they really expected last June that the price of sugar would go up. But they got mad at the President and handed him a slam.

Cuba would be so much better off with her leading strings cut, borrowing where she chose and buying from whom she chose, that it is astonishing that the mercantile interests of the island do not initiate a movement to bring that about. So far as her sugar production is concerned, it doesn't belong to her any more, and the Cubans can well afford to be indifferent as to whether the United States lets sugar in from Cuba at a preferential or not. It isn't the Cubans' sugar.

The National City Bank of New York is typical of the Appetite that has swallowed the island. Reciprocity, by treaty or enactment, is a joke, and wholly unneccessary. The Cuban people who want to buy things buy them where and from whom they are told, or they don't get the money to buy them with. The price doesn't count, but who gets the order does. Cuba, with virtually only one bank, or one group of banks, all representing the sugar refining interests in the United States and Canada, and all located in those countries, has as much chance for free financial action as the cud in the mouth of a cow.

The incomprehensible thing about the Appetite is that Cuba stands for it.

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Proposed Legislation on Corn Sugar

We publish below the substance of an address made by Mr. John M. Rogers, manager of the League's Washington office, in Washington on January 11, 1926, before a group of about sixty farm leaders from all over the United States. Mr. Rogers was present at the hearing on the corn sugar bill, but he believed that the matter had best be taken care of on the floor of the House and Senate by our Congressmen and Senators rather than by any testimony given by him before the committee. It is Mr. Rogers' opinion that we should lend encouragement to the production of corn sugar as a domestic product as it will add friends to our cause, but at the same time he thinks we should oppose any weakening of the Pure Food and Drugs Act, not applying it especially to corn sugar. Mr. Rogers' talk was along the following lines:

"There have been introduced in both the House and Senate, bills for amendment to the Food and Drugs Act, which, in effect, are exceptions to the Act. To quote Senate Bill 481, by Senator Cummins of Iowa, will cover the purpose of all the bills introduced. Senator Cummins' bill reads:

"'A BILL to amend Section 8 of an Act, entitled: "An Act for preventing the manufacture, sale, or transportation of an adulterated or misbranded or poisonous or deleterious foods, drugs, medicines, and liquors, and for regulating traffic therein, and for other purposes", approved June 30, 1906, amended August 23, 1912, March 3, 1913, and July 24, 1919.'

* * * *

"'Be amended so that Section 8 thereof shall include in its last paragraph the following:

"'Third. In the case of food products, because of having been sweetened with an article commonly known as corn sugar.'

"On January 7, the Committee on Manufacturers of the Senate held a short hearing. The only appearers were Senator Cummins and Congressman Cole of Iowa. The committee voted to report the bill favorably. One member of the committee suggested adding to the amendment, 'and syrup'. It was stated to the committee that this provision would not affect corn sugar when sold as such, but only manufactured products containing corn sugar, and had for its purpose the relieving of canned goods from the requirements of being labeled so as to show that it contained corn sugar, it being specifically stated that corn sugar, as such, would not be included, but would be branded and sold under its distinctive name. The Bureau of Chemistry of the Department of Agriculture is charged with the enforcement of the Food and Drugs Act. Application was originally made to the Secretary of Agriculture for permission to do just what these bills propose. During the administration of Secretary Wallace, he refused to accede to this request. Secretary Jardine has followed Secretary Wallace; the Attorney General has rendered an opinion supporting the two secretaries. When the matter came before Dr. Alsberg when he was Chief of the Bureau of Chemistry, he ruled that it would be violation of the Food and Drugs Act to grant the request. Acting Chief of the Bureau, Campbell, who served in the interim before the appointment of Dr. C. A. Browne, and Dr. Browne, when he became chief, sustained the original rulings.

"Through hundreds of years the word 'sugar' has come to mean 'sucrose'; therefore, the trade, including the manufacturer, dealer and user of sweetened products, have uniformly understood that these products contained sugar and that sugar meant sucrose, the product of sugar cane, sugar beet, maple and palm tree, and that while chemists and scientists sometimes apply the general term 'sugar' to dextrose, to levulose, and a great variety of other saccharides, that it was then used in its technical sense, but that the public understood sugar to mean sucrose.

"Corn sugar, in its chemical analysis, is $C_6H_{12}O_6$ and is dextrose, and is contained in a number of plants, notably corn and sweet fruits, such as cherries, grapes, etc. This dextrose has been for a long period commonly designated as grape sugar, and is

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being manufactured to some extent from grapes. In sweetening power, corn sugar is said to be 40% as sweet as cane or beet sugar. Sweetness, not being capable of scientific chemical analysis, must be governed by comparative taste. The statements from impartial sources say that 'corn sugar is 40% as sweet as cane or beet sugar' or 'less than 50% as sweet'. The manufacturers of corn sugar and others have claimed that it is as much as 66% to 75% as sweet as cane or beet sugar. Science can and has analyzed the energy value of corn sugar and finds it less than 95% that of cane or beet sugar. Corn sugar as now made, in crystal form, is white and appears as a sugar crystal, but as now manufactured it is readily distinguishable to the eye. To the taste, it is distinctly different from cane or beet sugar in that it lacks certain flavor—it might be termed 'flat' as compared to cane or beet sugar. Corn sugar is much less soluble in water, particularly cold water, than cane or beet sugar.

"The bills introduced have for their stated purpose the permission to use corn sugar, without marking on labeled manufactured goods of any kind, which would in effect confine it to canned fruits, vegetables and condensed milk. The advocates of the bill say they want 'an even break', which means that they desire that no statement be carried on the package showing that any kind of sugar was used in the product.

"It is claimed that corn sugar can be used in the manufacture of ice cream and bakery goods, which would not come under the provisions of the bill; therefore, it is only necessary to consider the uses of corn sugar in the canning industry. Statistics prove that in the canning of fruits and vegetables, the sugar content for the annual output is 60,000 tons. This can be definitely arrived at, taking the Census Bureau report of the volume of canned goods and vegetables of various kinds and applying thereto the percentage of sugar contained in each. The range of percentage being from less than 6% for pineapples to 8% for cherries, while in vegetables the range is from less than 1% to 4½%. In the manufacture of sweetened condensed milk, amounting to 333,335,000 pounds, the sugar content is 42%, which is exactly 140,000,000 pounds, or 70,000 tons of sugar, so in all canned goods, fruits, vegetables and milk, we find a total of 130,000 tons of sugar now used annually, from which must be deducted 11,000 tons contained in canned goods exported.* The proposed bill affects only 119,000 tons of sugar, being the amount used in domestic consumption. It is suggested that there may be some other uses for corn sugar, particularly in the manufacture of ice cream. The total production of commercial ice cream in 1923 was 183,412,000 gallons; ice cream is 14% sugar; commercial gallon weighs 5 pounds; therefore, each gallon of ice cream contains 7-10ths of a pound of sugar, equivalent to 64,000 tons total; so that if all canned goods for domestic use and all ice cream manufactured contained corn sugar only, and the value of corn sugar was 100% that of cane or beet sugar, there then would be use for only 183,000 tons.

"In actual manufacturing practice, a bushel of corn, 56 pounds, produces 20 to 22 pounds of corn sugar, 1½ pounds of corn oil, leaving at least 33 pounds of corn out of each bushel still in the form of feed, being gluten meal cake, corn gluten, etc.; put another way, 40% of the bushel of corn would be corn sugar. When the cost of manufacture and profits to the corn mill and the dealer are deducted, the most the corn buyer could hope to receive for the sugar in his corn would be 49c per bushel. Since again it requires 100 bushels of corn to produce a ton of corn sugar (approximately), and the American corn crop being three billion bushels, it is readily seen that the passage of this bill could not possibly be reflected in the market price of corn; it can be conceived that it would be beneficial to the two factories now producing corn sugar, namely the Corn Products Company factory in Illinois, and the Penick & Ford factory in Iowa, since the entire amount would be concentrated in these Corn Products mills, it appears that these beneficiaries are primarily responsible for the campaign for this bill.

"The sweetening value of corn sugar being less than half that of cane or beet sugar, it would be most

expensive as a sweetening medium unless it was sold for less than half the price of cane or beet sugar. Canners of products containing sugar, when they sell for export, will buy only imported sugar, as under the drawback provision of the tariff law they now receive 1¾ cents per pound raw value on imported sugar used in exported products. Having to buy dutiable sugar for use in goods exported, it is but natural that in buying sugar for exportable goods, that they secure from the same source the sugar used in the product sold for domestic consumption, thus further limiting the market for corn sugar. The production of corn sugar, because of its restricted uses, must necessarily be so small in volume that no gain in price would be reflected to the growers in the three billion bushels corn crop. As a competitor of cane or beet sugar, it can have but small place. There is a chance that it might open up new uses for cane or beet sugar to further sweeten products not now in use. The cane and beet sugar interests of America should encourage the production of corn sugar in America whenever and wherever produced and sold on its own merits and under its own name, as it would interest the states of the corn belt in fair protection and encouragement of sugar production in America, because corn sugar production cannot grow nor even survive without as much or more protective tariff than cane or beet sugar. The production of corn sugar will serve to advertise the use of cane or beet sugar, along with the efforts made for increased corn sugar consumption. Corn sugar producers, having a commodity of merit, should advertise and encourage the use of their product in manufacture, under its own distinctive name, just as they are doing when sold as sugar. There should be no doorway opened or breaks made in the strength of the Food and Drugs Act. On the contrary, corn sugar, with the merits claimed for it, should take pride in having the name carried on all manufactured products of which it is a part; in fact, the Louisiana sugar producers advocate and would take pride in having manufactured products not now so marked bear on their labels, 'Containing Pure Louisiana Cane Sugar'; the beet sugar producers would probably welcome the same provision regarding beet sugar and the corn sugar producers should take the same stand regarding corn sugar.

"To pass the proposed bill would open the door for a similar bill on 'Syrup', permitting the use of the word 'Syrup' without designating 'Cane', 'Maple', 'Corn', etc., which, of course, the Louisiana producers would oppose.

*All figures used are from the Census of 1923, and sugar in terms of granulated sugar and tons of 2000 pounds.
Using 1923 figures are necessary, because of the Biennial Census; they are the latest available in all points.

Freeze In Florida

On January 15, 1926, a freeze occurred at Canal Point, Fla., which killed not only the bud but practicaly all the eyes of the different varieties of cane being grown there by the United States Government and by the American Sugar Cane League. This freeze is said to be without precedent in the weather history of Florida and appears to have been very local as more northerly sections of the state did not experience it. At West Palm Beach, some forty miles east of Canal Point, the lowest temperature registered was 46 degrees. The result of this unfortunate occurrence will be to delay the distribution of a number of new varieties of cane into Louisiana from the United States Government stations at Canal Point and the American Sugar Cane League plot there for another year, or until the stubble from the cane that has just been killed becomes available.

A Gratifying Response

An article in the last issue of the Sugar Bulletin calling attention to the small number of replies received to the cane borer circular sent out by Mr. L. M. Pool's committee, supplemented by a second circular sent out by the committee on the same subject, has brought a large number of additional replies to Chairman Pool, and there is now apparently a widespread and determined intention to act on the recommendations made by the committee in the hope of thereby reducing to a minimum ravages of the cane borer in the Louisiana sugar district.

Nothing has given us more pleasure in a long time than the privilege we now enjoy of reporting this awakened interest.

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More About Ants and Borers

Commenting further on the perhaps too friendly relations between the cane borer and the Argentine ant, Mr. John A. Pharr writes us that he hopes the committee headed by Mr. Pool, which is now doing so much good work in connection with the cane borer, will extend their activities to cover the Argentine ant. Mr. Pharr says:

"Our fight against the borer is much easier in Louisiana than the problem some years ago in the Hawaiian Islands when the leaf-hopper threatened to destroy their sugar industry. Their trouble was to find a parasite, which was done at great expense, while we have the parasite with us and only have to protect it.

"I believe that when the proper investigation is made the entomologists will find the damage done by the Argentine ant is greater than they had thought.

"If these lands are to be cultivated successfully for cane, truck, or any other crop, except rice, in my estimation the ant must be exterminated.

"It has been stated by good authority that if all bird life was destroyed, within fifteen or twenty years thereafter there would be no animal life on the earth because of the ravages of insects on food crops. The Argentine ant destroys the young birds in the nest after they are hatched and before they are sufficiently able to defend themselves.

"I believe there should be some legislation on the subject, because if it is important for the cattle tick to be exterminated in Louisiana how much more important it is to destroy the Argentine ant in the sugar belt."

Dr. Hinds Forsakes Us

Dr. W. E. Hinds, entomologist of the Experiment Station and Extension Division, Louisiana State University, leaves this week for Lima, Peru, to study insect pests and fungus diseases affecting cotton in that country. Dr. Hinds is considered one of the most outstanding authorities on cotton diseases and pests and he is making this trip at the request of leading cotton growers of Peru.—*Times-Picayune*, Jan. 23, 1925.

Missing Numbers of The Bulletin

The Agricultural Experiment Station of Tucuman, Argentina, writes us that they are preparing to bind the issues of the Sugar Bulletin but their file lacks certain numbers which they desire to secure. We have sent them from this office nearly all the numbers they require, but there are four issues we cannot supply, namely:

Issue of March 15, 1923.
Issue of October 1, 1923.
Issue of February 1, 1924.
Issue of June 1, 1924.

If any of our readers can spare some or all of the above mentioned issues we will appreciate it if they will mail them to the office of the American Sugar Cane League, and we will in turn send them to the Agricultural Experiment Station of Argentina.

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We Say "Please"; The British Say "Must"

That ubiquitous pest, the mosaic disease of sugar cane, has claimed another country as its victim, this time the Island of Jamaica. But there seems to be nothing easy-going about the British authorities down there, and the government has taken hold of the situation with a strong hand. An official order has been issued forbidding, under penalty of the law, the planting of any corn within 200 yards of any cane field, because corn harbors the aphis which spreads the disease. The government inspectors will destroy without argument any corn found growing within 200 yards of any sugar cane.

The following instructions are also given to the planters to assist them in controlling the disease, and they are made compulsory:

(a) Plant an immune cane, and no further control is necessary. The only cane of this type available at present in Jamaica is the Uba. This has been tested in the Chattanooga mill used by the small settlers, and has given satisfactory results, making a marketable sugar, though of a slightly finer grain than that from the ordinary canes.

(b) When any other cane than the Uba is planted the disease can be kept under control by the following measures:

All fields showing more than 10 to 12% of infected canes must be reaped when ripe and then dug out completely and replanted with clean, mosaic-free tops. All tops for planting should be cut from growing canes from roots showing no sign of the disease.

All fields showing less than 10 to 12% of infection should be "rogued", that is, the diseased canes in them must be dug out and replaced by healthy tops. This process must be done regularly and thoroughly, as otherwise it is useless as a means of control. It should be carried out at least once every ten days and every row in every field examined. The infected canes dug out may be fed to cattle or used in any other way. By continuing this process regularly until the canes are too high to examine properly, the disease can be kept in check, but if at any time this process is relaxed the disease will return as bad as before. before.

It is better to dig out the diseased canes and thus to save the rest of the field than to allow the whole field to become diseased. Under the law the measures given above are made compulsory.

Mexicans

Mr. Hans Haas, a sugar planter of Vacherie, La., has written Mr. L. M. Pool, chairman of the cane borer committee, commending the suggestions of the committee but pointing out the difficulty of complying with some of them because of insufficient labor. Mr. Haas gives in his letter some facts and ideas relative to Mexican labor and says:

"Your circular relating to Cane Borer and suggesting the most effective way of destroying same was duly received and I shall do my best to follow directions recommended therein.

"Theoretically your suggestions are unassailable; if they will work in practice, however, remains to be seen.

"To plow under trash is an excellent idea; the decaying cane leaves will enrich the soil, but the trouble is that cane leaves decay very slowly, and if they do not decay it will be very hard to get the ground in workable condition. To haul trash on headlands is a financial impossibility under prevailing labor conditions.

"The least expensive method to follow would probably be the building of hibernating piles.

"To cut cane close to the ground is all important, altogether apart from the borer question, because the lower joints are richer in sucrose, and then every fraction of an inch counts, but our 'knives' like to cut high, and with the fight for knives which is getting worse every grinding one must not be too exacting.

"Another drawback is the unwillingness of some planters to do anything for their own or for their neighbors' benefit. 'Let the other fellow try it first', some say. 'I sell my cane for so much per ton. I don't care whether it is sweet or not.' In their foolish ignorance they do not consider that the buyer will have to go out of business if he is working without the profit to which he is entitled.

"All farming operations presuppose a supply of cheap labor. This is unfortunate but a fact which has to be reckoned with. Under prevailing prices for sugar we need cheap labor more than ever in this section, so many of our negroes, who, with all their faults, are the best hands we can get, having left for Chicago, where they get higher wages and better treatment better schools.

"Under existing emigration laws the only cheap labor we are able to get is the Mexican. They are good and intelligent workers and may be had in practically unlimited numbers. Both the S. P. and the T. & P. Railway know the value and reliability of the Mexican, and whenever they have a bad stretch of track which needs repair the Mexican extra gang is sent. The proverbial tardiness of the T. & P. passenger trains is a thing of the past since the Mexicans passed over the track. Why not give the Mexican a trial on one of our large plantations? Pardon me for straying from the subject, but the labor question is one of the most serious problems confronting the planter. I hear that some planters (Myrtle Grove, for instance) have not finished grinding on account of lack of hands.

"The Western Beet Sugar people advertise extensively every spring for Mexican hands."

Mr. Haas likewise sends a clipping from La Prensa, a paper published in San Antonio, Tex., which gives an account of the troubles of a number of Mexican families who went to one of the northern states recently to work on farms. It appears that they found conditions so bad that they had to return to Texas and they reached San Antonio in a destitute condition. The inference is that Louisiana ought to be easily able to get Mexicans, with what our planters have to offer in the way of congenial climate and the occupations of farm life.

There is little doubt that we can get Mexican labor if we want it badly enough to go after it a bit ahead of the grinding season, complete all arrangements for transportation and provide the expense thereof. Hitherto we have apparently wanted the Mexicans only bad enough to wish out loud that we had them.

Cotton

LOUISIANA STATE UNIVERSITY
AND
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Baton Rouge

January 19, 1926.

Editor, Sugar Bulletin:

Some leading sugar planters have very earnestly requested that the Louisiana Experiment Station set forth some outline of general recommendations for the production of cotton as a supplemental cash crop on sugar plantations. Unquestionably there is urgent need for a greater diversification of crops on many of these plantations if they are to continue raising sugar cane at all. Under these conditions we believe that some of these cane planters should consider planting some reasonable acreage in cotton this year in spite of the fact that the prospect for the entire cotton belt is that entirely too large an acreage is going to be planted in cotton to assure the most profitable returns therefrom.

In the Sugar Cane Belt certain fundamental considerations must be kept in constant view if cotton is to be produced profitably. Among these we would state particularly:

(1) That good drainage is essential.

(2) That under average climatic conditions, cotton is likely to fruit best on what would be regarded generally as the poorer types of soil. Avoid planting cotton on soils that are very rich in organic nitrogen.

(3) Cotton grows best generally where the seed bed is thoroughly prepared early and the soil becomes will settled before the cotton is planted. Thereafter the cultivation should be shallow but always sufficient to keep the crop free from grass.

(4) On Sugar Belt soils, plant preferably varieties that are somewhat dwarf in type of growth. Probably the best that we can suggest at present are Delfos 6102 and Lone Star No. 65.

(5) Where the land is bedded at 5½ to 6 feet as for cane, maximum yields of cotton cannot be expected with one row to the bed, but plants should be left closely spaced in the drill and where chopped a hoe's width between hills with from one to three stalks left per hill a good yield may be expected. Four feet is a good width for cotton rows on sugar lands.

(6) Even where cotton has not been grown nearby during the preceding year, weevil infestation must be expected and may become serious enough by early July to require poisoning to protect the crop against destruction by the boll weevil. Such provisions for poisoning must be considered as an essential step in making a profitable crop. Details in instructions regarding poisoning may be secured from the Entomologist at Baton Rouge or through the County Agents.

(7) The only commercial fertilizer that can be recommended on Sugar Belt soils is an application of from 100 to 200 lbs. of nitrate of soda per acre put under the cotton, that is well mixed with the soil before the seed is planted. This gives a rapid growth to the young plants and helps decidedly in getting a perfect stand also.

(8) The acreage devoted to cotton should be under the direct supervision of someone familiar with this crop. The special machinery required for handling cotton properly should be provided but will not be an item of great expense. The picking season for cotton will ordinarily precede the harvesting season for cane.

In addition to consideration of cotton production, the cane planter should certainly consider the production of soy beans as a feed or seed crop as well as for soil improvement and for growth particularly upon heavy black soils where cane is less successful.

W. E. HINDS,
Entomologist.

Approved:
W. R. PERKINS,
Director of Extension.

The Literary Digest publishes some statistics showing that the average life of a retail store in the United States, before it goes on the rocks, is 7.57 years. By comparison, sugar planting in Louisiana is a remarkably safe and stable business.

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We stand for the encouragement of Home Industries as against Foreign Competition.

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Some Sugar Facts*

By John M. Rogers

In no year prior to 1925, has the per capita consumption of sugar in the United States reached one hundred pounds. Complete official export records for 1925 will not be available before March 1st. These records, when completed, may possibly show the per capita consumption to be as much as one hundred pounds for 1925. Unofficial published data, purporting to give imports, exports, and consumption, carefully give figures showing imports and meltings, but give exports of sugar, as such, from Atlantic ports only, (New York, Boston, Philadelphia, and Baltimore). Exports of sugar, as such, from other ports, are not included. The exports published do not include any sugar used in manufactured articles, on which drawback is paid. Sugar, exported in manufactured articles is not sugar consumed in the United States, and therefore, should be deducted just the same as exports of sugar as such. Many loose and lurid statements have been made as to the effect of tariff on the purse of the American consumer, based on the erroneous figures published as referred to above.

The average annual per capita consumption of sugar in the home as sugar, is less than 40 pounds. The U. S. Department of Agriculture Year Book for 1924, under the table headed "Food Per Capita Consumption, Average Quantity Of, Specified For One Year", says:

"SUGAR, (pounds)	North Atlantic States		28.94
	South	"	27.86
	North Central	"	31.71
	South	"	27.54
	Western	"	33.39
	UNITED STATES		30.10."

A careful study of data compiled by the Bureau of Labor Statistics, fully agrees with and supports these figures published in the Agriculture Year Book. A reasonable explanation of the slight variation in per capita consumption, in the different areas, may be found in the variation of the use of manufactured goods, particularly bakery goods, ice cream and condensed milk bought in manufactured form. The export values of manufactured goods clearly show that these values do not follow or conform to the fluctuations in the price of sugar, with the possible exception of the abnormal period immediately following the World War.

The retail selling price of articles containing sugar show much less variation over periods than do the wholesale prices. This does not indicate that wholesale price fluctuations follow the changes in sugar prices, but makes it clear that because of standard sizes, measures, and packages, such as the loaf of bread, the weight and form of pies, cakes and crackers, packages of chewing gum, standard containers of canned goods, including condensed milk, standards of measure in ice cream, uniform sizes in bottles and packages containing liquid medicine, powders and pills, plug tobacco, cigars, cigarettes, meat packing, etc., etc., the consumer of manufactured goods, containing sugar, in the United States, does not pay for advances in price nor receive benefits for decline in the price of sugar used in these manufactured goods. Manufacturers, using two or more raw products, paying labor, rents, fuel and other costs, set up reserves to cover anticipated fluctuations on any or all costs of these items for fixed periods, thus permitting a price level for given periods. Slight, or even material, advances in quantity prices wholesale, when subdivided into hundreds, dozens, pounds, etc., become so insignificant as to preclude change in the retail price of package or quantity as dispensed. Manufactured goods, from statistical data given in the Agriculture Year Book, and other official records, show that practically double the amount of sugar is consumed in the form of manufactured goods containing or using sugar, to that amount used in the home as sugar, therefore if the price of sugar itself is not reflected in the price of goods manufactured containing or using sugar, it is obviously absurd to state that changes in tariff affect prices of manufactured goods containing or using

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sugar and thereby increase the annual per capita expenditure or the total per capita expenditure by the citizens of the United States, which is to say that arguments that a reduction in the tariff by legislation, executive order or otherwise, would save hundreds of millions of dollars to the citizens of the United States, becomes ridiculous and cannot be proven. If all sugar coming into the United States paid a full duty rate it would not affect the price of manufactured goods to the consumers of these goods.

The American controllers of Cuban sugar receive greater benefits under the existing tariff rates, than do American sugar producers. The Cuban preferential of 20% has enabled Cuban sugar to exclude all other foreign competitors from the sugar market of the United States. The increase in the tariff widens the difference between Cuban sugars and other foreign sugars and serves to give to Cuban sugar exclusive control of distribution of all that part of the sugar supply of the United States not supplied by domestic producers. The actual growers of sugar in Cuba, the Cubans themselves, receive no benefit from the 20% preferential granted Cuban sugar. The controllers of Cuban sugar give it all away in their successful endeavor to exclude other foreign sugar from the American market, and this aids them in their endeavor to decrease domestic sugar production and further aids them in their effort to finally drive out American sugar producers as competitors. The American public does not benefit through the Cuban preferential as the controllers of Cuban sugar base their price structure on their control of the American market, competing for business in equal tariff countries only when profitable to them in price or as an outlet for surplus above the ability to dispose in America. Controllers of Cuban sugar sell in non-preferential markets at the same price they do in the American markets for the purpose of disposing of their surplus in such foreign markets. The taxpayers of America lose the full amount of the preferential granted to Cuba with no benefits to them as American sugar consumers, with no benefit to the native Cuban, who actually grows the sugar, but with injury to the United States sugar farmer and sugar mill, who grow cane and beets and produce sugar therefrom. An actual loss accrues to the United States Treasury, therefore, to the taxpayer, through this 20% preferential, which in its final analysis, is a bonus of 44¢ per 100 pounds to the controller of Cuban sugar. This bonus, is as stated, given away by the recipient, for the sole purpose of controlling the American sugar market, and without benefit to the American sugar consumer. That part of the treaty between the United States and Cuba, providing for the 20% preferential to Cuban sugar, should be abrogated for the benefit of American sugar consumers, American taxpayers, American sugar producers, American sugar mills and refiners, who are outside the charmed circle of finance and refining, now in control of Cuban sugar producers. Cuban sugar should pay into the United States Treasury the same amount of duty as other foreign producers now pay; it would permit a further reduction of all taxes to the amount of the bonus of 44¢ per 100 pounds, now enjoyed by the controllers of Cuban sugar.

*The statements made in this article will be fully supported by official United States Government figures in subsequent articles.

Investigating Blackstrap, Syrup and Edible Molasses

Dr. C. O. Townsend, chief of the sugar division of the United States Tariff Commission, accompanied by two assistants, Messrs. Kenneth L. Stone and J. D. De Shay, is now in Louisiana conducting an investigation into the cost of producing and handling blackstrap molasses. At the same time he is making inquiries concerning the cost of producing molasses of the better grades and syrup. The investigation is being made under Section 318 of the Tariff Act of 1922, and is apparently an investigation for the information of Congress, as a basis for legislation, as action under Section 318 cannot be for the purpose of informing the President of the United States or intended as a basis for any action by him under the flexible provisions of the Tariff Law.

Dr. Townsend, in an interview with the Editor of the Sugar Bulletin, made the following statement:

"The U. S. Tariff Commission has ordered a survey of cane syrup, edible molasses and blackstrap. This is an informative survey ordered under the general powers of the Tariff Commission and comes more particularly under Section 318 of the Tariff Act of 1922 and not under Section 315 which contemplates a study into the differences in the costs of production between domestic and foreign competing countries. A study of cane syrup will be made not only in the large mills in Louisiana but also in the principal areas of production in which the product is made on the farms in Louisiana and other cane syrup producing states. A study will also be made of cane syrup imports particularly from the British West Indies. Edible molasses will be studied in conjunction with cane syrup but must necessarily be confined to the sugar mills making this commodity since edible molasses when produced at all, is strictly a joint product with sugar. Blackstrap will be studied with special reference to methods, and costs of handling and utilization. In addition to the study that will be made of blackstrap as a result of the operations of the sugar mills in Louisiana imports will form an important part of these studies since by far the larger part of blackstrap utilized in this country is imported from foreign countries particularly from Cuba. In all of these studies the tariff problem involved will be kept constantly in mind."

Dr. Hinds' Trip to Peru

LOUISIANA STATE UNIVERSITY
and
AGRICULTURAL AND MECHANICAL COLLEGE
Baton Rouge, La., Feb. 6, 1926.

Mr. Reginald Dykers,
Editor, The Sugar Bulletin,
301 Nola Building,
New Orleans, La.

My Dear Sir:

On page 4 of the Sugar Bulletin for February 1, there is a paragraph telling of Dr. Hinds' trip to Peru. I would like to supplement the information somewhat, so that no one will understand that he has forsaken the State of Louisiana permanently.

Cotton is grown around Lima, Peru, under irrigation on very large plantations. Seldom is there any rain, and never any frost, so one planting grows for three years. The yields ordinarily are large, compared with our averages. But last season the production in that section of Peru was cut in half by factors that the growers did not understand, possibly by boll weevils or other insects. So Dr. Hinds was called upon by a group of planters to investigate the conditions and to propose remedies. Having obtained leave of absence from this Experiment Station, he started on the trip the last week in January. It is his intention to return to Baton Rouge about the first of March, in ample time to start the 1926 experiments on Boll Weevil and Cane Borer.

Incidentally he hopes to get considerable information on sugar cane, which is also grown in the districts he will visit. He has taken photographic equipment, and will without doubt make his findings known when he returns, in a series of illustrated lectures.

If we can be of any assistance in his absence, please call upon us.

Very truly yours,
(Signed) Herbert Spencer,
Assistant Entomologist.

Preliminary Report of U. S. Interdepartmental Committee on Improvement of Sugar Statistics

In accordance with the instructions of the general conference between representatives of the U. S. Department of Agriculture, Bureau of the Census, and U. S. Department of Commerce held in Dr. Durand's office, January 7th, the committee consisting of Dr. G. B. L. Arner, Department of Agriculture, and R. L. Purdon, Department of Commerce, met in Room 301 Commerce Building, 11 A. M., Friday, January 15. In addition to the Committee the following were present:

Dr. Frederick J. Bates, Bureau of Standards.
Mr. C. F. Walton, Bureau of Chemistry.
Mr. Sherwood, Department of Agriculture.

The whole question of securing uniformity of sugar

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statistics was given impetus by the adoption of a definite program embracing the following steps:

I. Collection of data on preferences of private and official sugar statisticians throughout the country for the general use of the long ton or the short ton, this phase of the work to be carried on jointly by Dr. Arner and Mr. Purdon.

II. Investigation and preparation of a "standard table of conversion factors for use in calculating sugar equivalents" which has been undertaken by a committee consisting of Dr. Frederick J. Bates, Bureau of Standards, and Mr. C. F. Walton, Bureau of Chemistry.

III. General conference of all government officials interested to hear, discuss, and pass on their reports when presented by the two committees named above.

IV. Calling of an open meeting with sugar trade representatives to discuss these matters before final adoption, this meeting to be held under the joint auspices of the Departments of Commerce and Agriculture.

V. Formal adoption by government bureaus.

VI. Adoption by trade agencies and general extension throughout the sugar industry of the world insofar as practicable.

G. B. L. ARNER,
Department of Agriculture,
R. L. PURDON,
Department of Commerce.

A Proposal Concerning The Borer

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY
Washington, D. C.
Southern Field Crop
Insect Investigations.
Sugar Cane Insect Laboratory,
8203 Oak Street,
New Orleans, Louisiana.
February 11, 1926.

Mr. Reginald Dykers,
American Sugar Cane League,
New Orleans, La.
Dear Mr. Dykers:

The grinding season of 1925 has passed without any sugar planter trying the hot water or the cold water treatment of seed cane. Unless the planters will have none of these treatments, both of which are 100% effective in destroying all borers in the cane for planting, it would seem that further effort along the lines of freeing the seed cane of borers would be worth while.

We have found that field experiments on the borer on a limited area, especially if surrounded by other fields of sugar cane and corn, are not satisfactory. Borer moths from the outside fly in, and by fall the damage in the experimental fields is about as bad as anywhere else. At least a whole plantation should therefore be used as an experimental unit, and if this plantation should be separated from other cane plantations it would be better still.

We have made an effort to have the Government operate an isolated farm for field experiments, but

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on account of the desire of economizing in federal expenditures and for other reasons it seems impossible to get much support for this plan.

It seems, therefore, that if the planters want new control measures worked out they will have to go a long way in this direction themselves. Obviously, it is too much to ask of a planter that he operate his plantation for the public good, but it has occurred to us that several planters might combine and guarantee an individual against any loss he might suffer from an experiment which would be of equal value to all of them.

To illustrate, a whole plantation could be devoted to the cold water treatment, all the seed cane being treated with cold water for 72 hours. There would be some expense, which would be shared by each of a group of planters interested in seeing the experiment carried out. For the sake of argument, we will assume that the treatment might injure the cane, in which case the loss would be shared by all of the group of planters. More likely, the treatment would show a gain, in which case the group might share the profit or it might be allotted to the individual on whose place the work was done.

Similarly, the hot water treatment could be tried, the substitution of corn by soybeans or other crops could be tried, and so on. One might venture to say that with a number of neighbors deeply interested the planter on whose place the work was done would exert himself to see that every phase of the operation was conducted properly.

If the planters simply do not want the results of such experiments the whole argument automatically comes to an end. But if they do want them, we suggest the above as about the only way to arrive at what they desire.

Very truly yours,
(Signed) T. E. HOLLOWAY,
(Signed) W. E. HALEY,
Entomologists.

P. O. J. Cane at Local Test Fields

Mr. D. N. Barrow of the Extension Service of the Louisiana State University has written to The Sugar Bulletin giving some data as to the amount of P.O.J. cane planted on the various test fields in Louisiana. Mr. Barrow's report on this cane is as follows:

P.O.J. 234

Glenwood	4600 feet
Raceland	3300
Angola	500
Reserve	770
Sterling	300
Total	9470 feet

P.O.J. 213

Glenwood	2400
Raceland	1200
Angola	400
Reserve	1500
Sterling	250
Total	5750 feet

P.O.J. 228

Glenwood	4800
Raceland	200
Angola	100
Reserve	2400
Sterling	200
Total	7700 feet

P.O.J. 36

Glenwood	4400
Raceland	800
Angola	300
Reserve	250
Total	5750 feet

Cutting More Cane Per Day

By arranging to pay cane cutters on a basis of amount of cane cut by them, the daily output per day has been materially increased on several plantations, according to the report of the Committee on Cutting, Loading and Transportation presented at the 1925 annual meeting of the Hawaiian Sugar Planters' Association. Under the old system all members of a gang of cutters under a "luna" (foreman) shared equally in the total amount of the cane cut during a given period. Two methods of increasing the amount of cane cut per man are used: One plan is to split the big gang into smaller units of 12 to 20 men, permitting the men to select the members of their gang and keeping all cane cut by them together, thus creating "gang competition". The other method is to keep a record of the number of "lines" (30 to 35 feet) of cane cut per man, the average number of tons per line being ascertained by dividing the total tons cut by the gang by the total lines, and the cutter being paid for the number of tons cut.

Increased Output Shown.

The following table shows average increases as a result of increased output per man obtained by the new systems:

Plantation groups	Old gang system tons	New system tons	Increase tons
A	8.11	9.11	1.00
B	7.55	8.00	.45
C	5.00	8.00	3.00
All	5.70	7.65	1.95

The individual system not only gives more cane harvested per man but requires less men and less time. One striking figure is the greater number of tons cut in heavy cane. Thus, on H-109 cane yielding 74.35 tons per acre the daily average cut was 8.229 tons per man, while in H-109 cane yielding 54.73 tons the output was 7.061 tons per man. Firebreaks were cut on a separate basis.

By way of comparison it may be interesting to note that in Cuba 4 to 5 tons of cane per day is considered a good task per cutter, while in Louisiana 3 tons per day per man is an average. In each case it is usually true that the daily output has a direct relationship to the yield per acre of cane.—*FACTS ABOUT SUGAR, Feb. 6th,* 1926.

Casual Comments

It is persistently rumored that the Punta Alegre Sugar Company of Cuba is negotiating for the purchase of the centrals, Boston and Preston, property of the United Fruit Company, one of the officials of the Punta Alegre states that the sale is a possibility and the price mentioned is forty-four million dollars for the two mills.

—:o:—

A company has been organized by leading Mexican sugar producers for the purpose of handling all sales of the participating producers. This organization is said to control 80,000 tons per year and about half of the total. This company is the Compania Commercial Commissionisa, S. A., Isabel La Catolica, No. 40, Altos, Mexico, D. F.

—:o:—

A bill was introduced in the National Sobranje of Bulgaria on November 9, 1925, providing for an increase in the import duty on sugar, for 7.3 leva per kilogram (leva equals 19.3¢—on December 31, worth $.007268).

—:o:—

"According to report put out by the Experiment Station Pasaroeon rain during November, 1925, was still below average of last ten years in Java. Several mills have had no rain for eight months and the general opinion is that we must calculate on the production to be far below that of 1925.

According to estimates of October 31, total production of associated mills during 1925 amounted to 33,619,746 piculs; production of non-associated mills amounted to 3,924,135 piculs, making the total, Javan sugar, 37,543,881 piculs, a new record.

—:o:—

South African Sugar Plantation, Census, December 30, 1925, taken April 30, 1925, showed 216,972 acres of European (white) owned farm under sugar cane, compared with 210,996 acres in 1923. There is available for sugar cane, an additional 98,237 acres. All, except 172 acres, are planted with Uba variety of which 72,986 is plant cane and 54,273 first ratoon. During the 1924-25 season, 1,616,210 short tons of cane were raised from 86,631 acres, which was equivalent to about 220 tons of sugar.

—:o:—

During the latter part of the war and periods following, the Philippine National Bank devoted large Government funds to commercial purposes, the most important of which were investments in six sugar centrals, five on the Island of Panay, and one in central Luzon. The bank practically financed the construction of these mills, the total investment at the time amounted to about twenty million dollars. The work was done in the period of peak prices, so that the present value is considerably less, compared with the original cost. Since the bank took control, about four million dollars additional has been expended in improvements. This amount is practically balanced by payments to the bank by the centrals out of profits. It is unofficially estimated that three of the centrals can repay the bank within five years, provided an average price of 12 pesos per picul (4½ cents per pound) is obtained for their sugar. The other three will require ten or more years. The centrals in the past two or three seasons have been able to meet all such charges and practically all interest in arrears of such bank loan. In addition to this amount the sugar planters owe the bank about ten million dollars. The Philippine National Bank has assumed the function of an agricultural bank and made finances to farmers. This leaves a total investment on the part of the Government of about thirty million dollars in sugar.

A Little Salvage From Florida

At the U. S. Sugar Plant Field Station near Houma, La., some cane has just been planted that was salvaged by the Government after the freeze at Canal Point, Fla. This cane happened to be planted very close to the shore of Lake Okeechobee and partially escaped destruction. The plantings just made at Houma comprise 157 new C.P. seedlings and about a dozen newly imported foreign commercial varieties.

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Dr. Chas. E. Coates,
Baton Rouge, La.

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Vol. 4 NEW ORLEANS, LA., MARCH 1, 1926 No. 11

Sugar Production And Cane Diseases*

Extent of Losses from Disease Inadequately Realized—Economic Effects of Reduced Production.

By Melville T. Cook,
Plant Pathologist, Insular Experiment Station, Porto Rico.

The growing of a high-yielding crop of sugar cane involves many factors, such as character of soil, water supply, fertilizers, cultivation, varieties used, insect pests and plant diseases.

It is the purpose of this paper to discuss the last of these factors in relation to sugar production, with a special view to conditions obtaining in Porto Rico. Plant diseases have long been recognized as important factors in sugar production in various parts of the world, but few people realize the enormous losses due to these agencies. If a man has money in his pocket and loses it, he knows that he has had a loss; but many men do not appear to appreciate losses of money which they have never actually had in hand. Yet a reduced yield of sugar due to one or more plant diseases which could have been prevented is just as much a loss as money lost from the pocket, from the dying of live stock, or from the burning of a building. The prevention of such losses by the control of these diseases where possible is just as much a part of good agriculture as methods and practice in cultivation.

Costs No More With Good Cane.

It costs just as much to prepare the land, to plant, to cultivate and to fertilize poor varieties or diseased cane as it does to give the same attention to good varieties and healthy cane. The only additional expense in growing good varieties and healthy cane with a high yield, over that of growing poor varieties and diseased cane, is the additional expense of cutting and grinding a heavy, high-yielding crop. It is very generally recognized that cane which is relatively free from disease will give a higher yield than cane which contains a high percentage of infection with some of our well-known diseases. Therefore, any condition which prevents the production of a maximum tonnage and sucrose content should be investigated and precautions taken to secure the highest possible tonnage and sucrose content. In many cases the dwarfing of plants and the reduction of sucrose are due to definite diseases, some of which are well understood while others are as yet the subjects for research by trained scientists. The most important diseases are due to fungi and bacteria, but others may be due to other organisms, character of soil or water supply, or to unknown agencies. A plant which cannot reach full size because of disease must necessarily give a low tonnage and a correspondingly low yield.

Leaf Diseases.

Every part of the plant—leaf, stem and roots—is subject to diseases. Dead spots on the leaves are usually caused by diseases which are mostly due to fungi and bacteria, although they are so common that few growers realize that they are effects of diseases. The leaves are the laboratories of the plant, and it is in them that most of the sugar is manufactured by the plant. Therefore, if 10 per cent of the surface of the leaves is killed by a fungus, the activities of the plant are reduced approximately 10 per cent. Our most common leaf spots are the "eye spot" (*Helminthosporium sacchari*) and the "ring spot" (*Leptosphaeria sacchari*), in which parts of the leaves are killed. The mosaic disease, in which the amount of green coloring material in the leaf is so greatly reduced that its power to produce sugar is reduced in

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proportion to the severity of the disease, is another example of this class.

Root Diseases.

The roots of the cane are subject to the attacks of many organisms, such as fungi, nematodes, snails, and other forms of life, by which they are killed or injured to such extent that they cannot take in the water and food materials necessary for the growth of the plant. These organisms are not uniformly distributed; some of them are most injurious in dry soils, while others are most injurious in wet soils. When these root injuries are due to small animals, the wounds form the most favorable openings for fungi and bacteria. The weakened condition of the plant is also favorable for these organisms. When a crop is grown continuously in the same soil for many years, these injurious organisms sometimes become so abundant that the soil is said to be "sick". This is one of the factors which has led to the practice of crop rotation in so many of the older agricultural countries of the world. Some of the diseases of this type, especially those caused by fungi, may be reduced by the selection of resistant varieties and modern methods of cultivation.

Stalk Diseases.

The growth of the stem is checked by the diseases of the leaves and roots and also by its own diseases. The most common type of stem diseases is those which are due to organisms living in the water-carrying passage of the stem. We have two stem diseases in Porto Rico which are especially important. They are the vascular disease (*Plasmodiophora vascularum*), in which the organism blocks the water passages, and gumnosis (*Bacillus vascularum*), in which the organism not only blocks the water passages but also destroys the cell walls. Both of these diseases can usually be held in check by the use of modern methods. We cannot consider them as important at this time as some other diseases which have a much wider distribution.

It will be readily seen that, even though a disease does not kill a plant, it may dwarf the growth and reduce the tonnage or may reduce the sucrose content of a good-sized plant. A plant that has mosaic or root rot is very likely to be dwarfed. A plant infected with leaf spot fungi that destroy a part of its foliage cannot produce the maximum amount of sugar.

Preventive Methods Available.

Diseases are seldom eradicated but they can be reduced and held in check in many cases. This reduction of losses by the controlling of diseases has been aptly referred to as "preventing the waste". That the losses in sugar production can be reduced by holding the diseases in check has been demonstrated repeatedly, yet there are many growers who do not take the simplest precautions.

Diseases have, no doubt, caused losses to a greater or less degree from the earliest cultivation of sugar cane, but these losses were not fully appreciated until sugar producers were brought to a rude awakening by the mosaic. This disease was first reported from Porto Rico in 1915 and within four years it had extended to practically all the sugar-growing districts of the island except the Yabucca valley, and was very generally recognized as the cause of heavy losses. Although practically everyone in Porto Rico who has had any real experience with this disease is fully convinced on this point; nevertheless, we have very little dependable data on the subject.

Mosaic Losses.

In 1914 Lyon reported about 40 per cent loss in Hawaii in fields with practically 100 per cent infection. Hansford reported losses in Jamaica ranging from 15 to 45 per cent. Edgerton also reported losses from Louisiana.

Mr. C. A. Figueroa made a study of sugar production in Porto Rico for 1917 to 1919 and published figures showing the following losses:

No. Mills.	Locality.	Per Cent Loss.
6	Bayamon-Barceloneta	18.3
7	Arecibo-San Sebastian	39.7
4	Rincon-Lajas	39.4
3	Sabana Grande-Penuelas	17.4
8	Mercedita-Providencia	10.8
8	Maunabo-Fajardo	22.2
1	Cayey	50.0
	All others	34.0

It is recognized that these losses may be reduced by: (1) Planting healthy seed cane; (2) roguing out diseased plants; (3) suppressing corn, grass and other plants that carry the disease and support the corn aphis; (4) planting of immune or highly resistant varieties of cane.

The leaf spot diseases undoubtedly cause heavy losses but there are no accurate data as to the amount. Their great abundance, and in many cases their severity, justifies a very careful study of their characters and methods of control.

Very little is known about root diseases, but the loss due to them is comparable to the loss caused by mosaic. They furnish a most important field for study.

Risk in Importing Canes.

Just at present there is a great demand for new varieties of sugar cane, which can be secured in but two ways, viz., by importation and by development within our own territory. Importation is accompanied by many dangers, due to foreign organisms which may prove even more destructive than in their original home. Varieties should never be taken from one part of the world to another except under governmental supervision. New varieties may be developed under either governmental or private control, but in any case their resistance to disease should be one of the factors taken into consideration.

The holding of diseases in check means increased yields per acre with little or no increase in cost of production, and means to this end should be practiced to a greater extent by our growers and studied by government scientists.

Jamaica's Methods

In the belief that it will be of considerable interest to the readers of the Bulletin, we print below a portion of the text of a letter written from the Island of Jamaica on January 2, 1926, by Mr. J. T. Landry to Mr. E. G. Robichaux, as follows:

> "Was agreeably surprised to see how much attention is given the agricultural end. The owners are great believers in technical control. Everything is worked out on strictly scientific principles. I was ashamed to admit to the owners here how little attention we in Louisiana have given to the combatting of the various cane diseases. As soon as the mosaic disease appeared here stringent steps were taken to prevent its spread. Laws were passed prohibiting the planting of corn anywhere within a quarter of a mile from the nearest cane fields. Uba cane, immune to mosaic, was planted as a border around all the estates; the planters are required by law to rogue their cane every week until the cane is too dense for the workmen to go through it. Roguing means to pull out all the diseased stools and destroy them, resulting in the healthiest and prettiest cane you ever saw, yield 30-40 tons per acre. We have here an experimental plot, where over 60 new varieties of cane are being observed. P. O. J. varieties were not successful here. Cane is planted every three years. There is no crop rotation. This company has some lands that have been continuously in cane for nearly two hundred years. Have a rich alluvial soil down to a depth of 10-12 feet. Very intensive and deep cultivation is practiced by means of steam plows. More attention is given the fields than the factory here. The owners correctly realize that the sugar must first be produced in the fields before it can be extracted at the factory."

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Cane Trash Disposal

(See Illustrations on Opposite Page)

UNITED STATES DEPARTMENT OF AGRICULTURE.

SUGAR-PLANT INVESTIGATIONS.
Bureau of Plant Industry.
U. S. Sugar Plant Field Station,
Houma, La., Feb. 16, 1926.

MR. REGINALD DYKERS:
General Mgr. American Sugar Cane League,
New Orleans.

Dear Mr. Dykers:

I enclose herewith three photographs illustrating the method of cane trash disposal used for the past five years by Mr. Gus Bergeron, sugar cane farmer on Bayou Black.

The first picture shows two men pulling the matted debris from the top of the middle trash row, using old-fashioned ditch-bank sweeps (potato hooks also adaptable); the second shows how the trash is covered with an ordinary mould-board plow by turning a light furrow from the sides of the adjacent ridges; and third, the completed job.

The total cost of this procedure, including mules and supervision, has been carefully figured by Mr. Bergeron to amount to $1.10 per acre. One man raking trash keeps ahead of one man plowing, it being found unnecessary to remove the trash from the top of other than the middle row where the customary three-row harvesting unit is employed. Two trash handlers and two plows, as here illustrated, cover eight acres per day. Trash in this field is from 22-ton cane of Louisiana Ribbon.

Mr. Bergeron has plowed under trash mainly for its fertilizer value 100 lbs. of nitrogen alone per acre), and for the mechanical improvement which it brings to heavy soils. He had only lately learned of its indirect role in borer-control.

The method is essentially the same as recommended for many years by Messrs. Holloway and Taggart. Considering its simplicity and relatively low cost in conjunction with the recent propaganda against trash burning, one is amazed to note the miles and miles of smoldering fields in passing along almost any Louisiana highway during the past week. One can only conclude that the average Louisiana planter is at present so depressed financially that he is unable to incur the small expenditure for the admittedly excellent investment in trash conservation.

Very truly yours,
(Signed) R. D. RANDS,
Pathologist.

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No. 1 Pulling matted Trash from top of middle Trash row

No. 2 Covering Trash with ordinary Moldboard Plow

No. 3 The Completed Job

The Battle Between Planters And Insect Pests

REPRINTED FROM "THE NATIONAL GEOGRAPHIC MAGAZINE"

There is no phase of Nature in Hawaii more dramatically interesting than the struggle between the sugar planters and the insect enemies of cane. In countries to which various form of animal life are native there are always parasites which prey upon them and hold them in check. But introduced forms of life which find living conditions to their taste and natural enemies wanting, get a foothold and make a headway that is scientifically startling and economically dangerous.

Nowhere else in the world is that condition better exemplified than in Hawaii. With a climate ideally suited to the requirements of innumerable tropical and subtropical insects, and with food supplies luxuriant and perennial, when one of these species effects a landing as a stowaway from some other country, it promptly begins to spread and, without natural enemies it, rapidly colonizes the country.

Typical among the stowaways that came to Hawaii in years gone by are the cane borers and the cane leaf hoppers. The borer is a beetle and the hopper is a kind of plant louse. They effected their entrance on importations of cane seed and cuttings.

As years passed they both became so numerous that they threatened utterly to destroy the sugar industry of the Islands. With such a menace, the Hawaiian sugar planters organized an experiment station whose duties should include the discovery and importation of natural enemies of the borers and the hoppers.

How these enemies were found, colonized and set to work on the borers and hoppers is one of the remarkable romances of the sugar industry.

In 1906, Mr. F. Muir began a quest for the enemies of the stalk-riddling cane borer, whose evil disposition justifies its scientific name, "Rhabdocnemis obscurus". First he went to China, but no borers were found. Then he visited the Federated Malay States, and from there journeyed to Java, but without success.

Discouraged, he was about to content himself with some cousin of the borer, ascertain its enemies, and import these into Hawaii, in the hope that they would attack the borer there as valiantly as they attack the borer's cousins elsewhere. But then he remembered that parasites are constant creatures, with their tastes running so much in a groove that they perish rather than change their habits even so slightly as swapping of hosts might involve.

He therefore headed for Borneo, but neither in the field nor in the Sarawak Museum could the borer be found. He was about ready to admit the "obscurus" was a good name.

From Borneo Mr. Muir retraced his steps to Java, and thence shipped to the Molucca Islands. Visiting Amboina, of this group, he still found no trace of the borer, and the natives did not recognize the specimens he had brought from Hawaii.

The Borer's Deadly Enemy Is Finally Found.

Again he set forth, proceeding to the island of Larat, via Kei and Aru Islands, and finally located borers not only in sugar cane, but also in pinang and sago palms.

Now that "obscurus" stood revealed, where were its parasites? He searched high and low, far and wide; none was to be found.

Finally he seized upon a forlorn idea: If the borer lived in palms in Larat, might it not also have the same habitat in Amboina? Going back to that island, he found the surmise correct. The borer was abundant in the sago palm, and there he found it attacked by a little fly that laid its eggs in the borer's larvæ.

Here, then, was Hawaii's salvation from the borer if—if the friendly fly could be imported to the Islands. Repeated efforts to forward the flies and their pupæ failed—they always died before arrival in Honolulu. At last Mr. Muir decided to accompany a shipment himself; and journeyed safely with them to within a single day's sailing of Honolulu, only to have them die without apparent cause.

Back to the Moluccas he was forced to go again. Visiting Ceram Island, he found conditions about the same as in Amboina, and then decided to go to New Guinea. At Port Moresby, on the latter island, he heard that the flies he sought were up Laroke River. He visited a camp 15 miles up the river and, finding them, stocked a number of cages with borer larvæ in which the parasitic fly had laid its eggs, and, though suffering from incipient typhoid fever, he set out via Brisbane, Australia, for Honolulu was his precious parasites.

But again fate was against him. At Brisbane he had to go to the hospital, after dispatching his flies unattended. They died long before their ship sighted the mid-Pacific's magnificent harbor.

Once more able to travel, Mr. Muir went to the Hawaiian mountains to recuperate, and then set out for Papua. This time he decided to establish two half-way breeding stations—one in Australia, and the other in the Fiji Islands. Arriving in Papua he collected more borer larvæ parasitized by the much desired fly, and in spite of an attack of malaria, he set out for Fiji. Here he had to go to the hospital again, but not until he had built a breeding cage for the flies.

At last he recovered and with reinforcements brought by an associate finally arrived in Honolulu with living flies on August 16 1910 more than four years after starting on his quest.

Once safely in Hawaii, the flies began to spread with great rapidity and to work havoc among the borers, laying their eggs in vast numbers in the young of the borers.

So effective were these parasites that the borer has become a negligible facto rin the cane-growing situation. The yield of sugar per ton of cane has gone up, the yield of cane per acre has increased and a menace that threatened to overwhelm the industry has been thwarted. On one plantation the number of borer beetles collected declined in two years from 27,010 to 1,568.

Meanwhile, the borers becoming scarcer as a result of the attack of the fly, the latter has also become scarcer because it has not learned how to gain a living off of any other kind of insect. But it ever stands guard against the borer, for just as soon as there is a new flare-up of borer activity, the flies begin to mul-

tiply again and continue to swell their armies until the borers have been duly subjugated.

An even greater menace to the sugar industry than the cane borer developed two decades ago when the leaf hoppers grew numerous. Any one familiar with the rose chafer and such small creatures of our door-yards knows the hopper type of insect. On a single infested sugar plantation production fell from 19,000 tons to 3,000 tons in three years. The hoppers punctured the stalks and leaves of the young cane and laid their eggs by the thousands in these punctures. Hatching out, the youngsters sucked the juices of the plant, thereby sapping its strength.

When the ravages became alarming, the entomologists of the Sugar Planters' Association were set to the task of finding where the hopper came from, and what its enemies were.

THE ENEMY OE THE HOPPER FOUND.

Finally it was ascertained that the pests had been imported as stowaways on seed cane brought from Australia. Going to the Library of the British Museum, in London, the entomologists found descriptions of the hopper and its native habitat, in Queensland, Australia. Visiting that country, they spent weeks hunting its natural enemies. One by one such enemies were discovered. One was an almost microscopic insect which, much as a mosquito attacks a human being, steals upon and attaches itself to the hopper's body, stinging it and laying a tiny egg beneath its skin. When this egg hatches the larvæ has such a tremendous appetite that by the time it is grown the hopper's interior department has been devoured and the parasite emerges ready to place its egg in some other animated combination incubator and larder.

The entomologists found another insect which, from the sugar growers' standpoint, has an even more successful plan of campaign against the hopper. It goes about seeking out hoppers' eggs in which to lay its own. Since its young hatch much more quickly than the hopper, they come to life in time to eat the hapless embryo hopper, and off of that feast to grow strong enough to lay eggs, in their turn, in the eggs of other hoppers.

Preyed upon by one class of enemies that uses their live bodies first as incubators and then as restaurants, and by another class that uses their eggs as hatcheries and larders, the hoppers were forced to sound a retreat. Man had found irresistible allies, and so again the Hawaiian sugar industry was saved.

Cultivation and Thinning of Sugar Beets

Baton Rouge, La., February 25, 1926.

Cultivation of the sugar beets should begin as soon as the plants are an inch high and should consist of stirring the ground close to the drill with some light implement such as a small harrow at the same time removing with a light hoe any grass or weeds that may have started.

As soon as the beets have attained a height of four inches this light cultivation should be repeated and should be followed with hoes blocking the beets out to bunches six to eight inches apart.

In about a week after blocking the hoes should again go over the field this time thinning the beets to one plant in the hill. In this final thinning care should be taken to leave the most vigorous plant and to disturb it as little as possible. Subsequent cultivation should consist of stirring the ground lightly once a week or as often as is necessary to maintain a good mulch and to prevent the growth of grass and weeds.

Beets do not need and dirt thrown to them. The cultivation should consist of simply keeping a mulch over the ground and preventing the growth of grass and weeds.

With the coming of warm weather the beets will grow rapidly and if well cultivated while young will soon take possession of the ground, first shading the spaces between hills and quickly shading the middles of the rows. As soon as the rows are well shaded cultivation can cease.

D. N. BARROW,
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We stand for the encouragement of Home Industries as against foreign competition.

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MEMORANDUM OF AGREEMENT BETWEEN THE BUREAU OF PLANT INDUSTRY, UNITED STATES DEPARTMENT OF AGRICULTURE, THE LOUISIANA EXPERIMENT STATION, AND THE AMERICAN SUGAR CANE LEAGUE OF THE U. S. A., INC., RELATIVE TO TESTING AND DISTRIBUTION TO PRIVATE GROWERS OF IMPORTED SUGAR CANE VARIETIES AND SEEDLING VARIETES PRODUCED CO-OPERATIVELY

I.

The parties to this agreement are the Bureau of Plant Industry of the U. S. Department of Agriculture, hereinafter called the Government Station, the Louisiana Experiment Station, hereinafter called the State Station, and the American Sugar Cane League of the U. S. A., Inc., hereinafter referred to as the Cane League.

II.

To insure thorough trial of varieties under Louisiana conditions before distribution, it is agreed that plantation trials and mill tests be performed on twelve selected plantations with all cane varieties that appear worthy of such trials and tests as a result of their performance at the State Station at Baton Rouge and the Government Station at Houma. Selection of these varieties for large scale trials and tests will be by the Director of the State Station and the Chief of the Bureau of Plant Industry with the advice of the President of the Cane League or their representatives in conference. It is expected that not more than ten new varieties will be tested in this way each year. Supplies of seed cane will be pooled for planting the tests if necessary. The plantations selected for these large scale tests are the following:

Raceland	Glenwood
Cinclare	Reserve
Southdown	Youngsville
Myrtle Grove	Sterling
Cypremort	Magnolia
Greenwood	Angola
Erath	

and the manner of the tests will be indicated in written contracts drawn up between the President of the Cane League and each individual plantation co-operating. The form of these contracts will be drawn up and approved by the three parties hereto and will embody the following principles:

(a) Seed cane of each of the selected varieties will be divided into twelve equal lots of approximately five hundred to one thousand pounds (or enough to plant up to one-half acre) and delivered at planting time to each of the above-named plantations. The expense of transportation to be borne by the individual plantations involved.

(b) It will be planted on land selected by the President of the Cane League or his representatives and cared for, harvested and tested in a manner prescribed in the contract above mentioned at the expense of the individual plantation.

(c) Title to this cane will be vested in the State Station or the Government Station and their representatives will be authorized to order complete destruction of all cane including the stubble of any variety if in the opinion of the Director of the State Station, of the Chief of the Bureau of Plant Industry and the President of the Cane League or their representatives in conference it has not come up to standard. Destruction of such varieties will be accomplished by grinding the cane during the harvest season if practicable and plowing up the stubble. The plant cane of each variety *in the test plats* will be ground to furnish information on milling qualities.

(d) If any variety successfully passes the prescribed tests and trials and is recommended for commercial planting by the Director of the State Station, the Chief of the Bureau of Plant Industry and the President of the Cane League or their representatives in conference, 80% of the increase will be offered for sale by the League and sold at a price agreed upon by the signers hereto, one year after the mill test to all

THE
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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

applicants who are legitimate sugar cane growers, in the order that applications are received, and the proceeds shall be turned into the Treasury of the Cane League. A fair and impartial allotment, based on supply of seed cane, number of applicants and acreage farmed by the latter will be arrived at by the three parties to this agreement.

(e) Twenty per cent of the increase and the stubble remaining in the ground will at the same time be turned over to the co-operating plantations as compensation for their expenditures in growing the cane for two seasons. Succeeding crops are however to be weighed for yield and hand mill tests run by the plantation to furnish information on second, third or older stubble crops at the discretion of the parties to this agreement.

(f) Published statements on performance of any varieties tested at the co-operating plantations will be released only after review by the Director of the State Station, the Chief of the Bureau of Plant Industry, and the President of the Cane League or their representatives in conference.

III.

Technical supervision of the tests at the twelve co-operating plantations, collecting of data and summarizing results will be divided between the personnels of the two co-operating experiment stations each station supervising six tests.

(Signed) W. R. DODSON, DIRECTOR,
Louisiana Agricultural Experiment Station.

Jan. 17, 1926.
Date

(Signed) STEPHEN C. MUNSON, PRESIDENT,
American Sugar Cane League of the U. S. A., Inc.

Jan. 18, 1926.
Date

(Signed) W. A. TAYLOR, CHIEF,
Bureau of Plant Industry U. S. Department of Agriculture.

Date
Jan. 22, 1926.

Estimate Of Loss Caused By Cane Borer

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS,
339 Post Office Bldg.
New Orleans, Louisiana
March 8, 1926.

A co-operative estimate of the damage to the sugar cane crop in Louisiana, due to the sugar cane moth borer, has been made for the fourth consecutive crop by Mr. Lionel L. Janes, of the Bureau of Agricultural Economics, and Messrs. T. E. Holloway and W. F. Haley, of the Bureau of Entomology, U. S. Department of Agriculture. All the work was done through the local offices of the Department in New Orleans.

The methods of estimating used by the two organization were widely different, the entomologists calculating their results from field examinations made by themselves, while the Bureau of Agricultural Economics relied on the replies to questionnaires sent to sugar planters. Yet the estimates obtained by the two different methods were very close.

The loss for 1925 was estimated at 30% of a full crop. This compares with a loss of 13% for 1924, 23% for 1923, and 17% for 1922. The loss for a normal year is estimated at 19%. In 1925 there was literally a loss of 100% for some fields, where the cane was so badly bored that it was refused by the factory.

The Bureau of Entomology has supplied the following data relative to the life history of the moth borer with suggestions for its control:

The sugar cane moth borer is a "worm" about an inch in length when full grown, which makes tunnels through the stalks of sugar cane and also corn, as well as related plants. Corn, not sugar cane, is its favorite plant, and in corn it breeds rapidly and in large numbers. The adult is a moth, and when the corn dries out in midsummer the "worms" turn into

moths which fly over to the adjoining sugar cane fields, and deposit their eggs on the leaves. The eggs soon hatch, and the damage to the sugar cane increases rapidly. It is for this reason that the recommendation is made to plant corn fields far from cane fields, or better still to replace corn with some crop such as soy beans on sugar plantations.

As there are four or five generations or "broods" of borers during the year, and as each female lays about 200 eggs, it can easily be understood that in this pest the sugar planters have a serious problem. Just how serious was not fully realized until the co-operating Bureaus began to publish their estimates three years ago.

Another recommendation is **NOT** to burn the cane leaves or "trash" left after grinding. This results not in much destruction of borers, but apparently in the destruction of a small wasp-like parasite which destroys the borer eggs. The trash should be lightly covered with earth in the fall—that is, just enough earth on each side of a row of trash to hold it. The cane should be off-barred as usual in the spring. Later, the earth should be plowed off the trash, and still later a plow should be run under the trash, throwing it on each side. This procedure allows decay to advance both through the air and the soil. Not only is considerable control of the borer secured, but the soil is benefited by the addition of much organic matter.

In the questionnaire the sugar planters were given the opportunity of voting on whether additional scientific work should be done on the borer by the Bureau of Entomology, such as the establishment of a small plantation or farm for field experiments. A larger response was obtained by this question than by any other, and over 89% of the replies were in favor of such work. It should be explained that owing to the flight of the moths an isolated plantation is needed for field experiments, especially if the acreage be small. For this reason land otherwise available at the experiment stations, of which there is very little, is not suitable for the work.

LIONEL L. JANES,
Agricultural Statistician.

Buying Cane On the Sucrose Basis

Editor Sugar Bulletin:

There is a great deal of dissatisfaction felt by the cane growers of the State, and the factory owners as well, over the present custom of paying for cane delivered at the factories in proportion to the prevailing price of sugar and not including in any way the value of the cane as measured by the available commercial sugar and molasses it would produce. By this arrangement the same price is paid for all kinds of cane, independent of its intrinsic value, so that the factory often loses heavily on green cane and secures a handsome profit on ripe cane. The ideal condition desired by all interested in the sugar industry would be for the cane grower to share with the factory the losses incident upon the grinding of green cane, and for the factory to in turn share with the cane grower the profits made by grinding ripe cane. The writer desires to offer for the consideration of both cane grower and factory operator a practical plan which will bring about the desired results. All that is needed to determine the proper price of the cane delivered by the individual cane grower is the per cent sucrose and the price of raw sugar, using these figures in the following formula:

Let a = % sucrose in juice extracted from the cane.
Let b = Price of raw sugar.
Let x = Price to be paid for cane.

Then:

$$x = (8.25 \times a)\, b.$$

In the following table the first part of the formula has been worked out which shows the number of cents on each cent of the price of raw sugar. So that after determining the per cent sucrose on the juice, the price of raw sugar is multiplied by the cents in the second column, giving the price of the cane.

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Per Cent Sucrose	Cents per ton for each 1 cent of price of sugar	Per Cent Sucrose	Cents per ton for each 1 cent of price of sugar
8.0	66.0	11.0	90.8
8.1	66.8	11.1	91.6
8.2	67.7	11.2	92.4
8.3	68.5	11.3	93.2
8.4	69.3	11.4	94.1
8.5	70.1	11.5	94.9
8.6	71.0	11.6	95.7
8.7	71.8	11.7	96.5
8.8	72.6	11.8	97.3
8.9	73.4	11.9	98.2
9.0	74.3	12.0	99.0
9.1	75.1	12.1	99.8
9.2	75.9	12.2	100.7
9.3	76.7	12.3	101.5
9.4	77.5	12.4	102.3
9.5	78.4	12.5	103.1
9.6	79.2	12.6	104.0
9.7	80.0	12.7	104.8
9.8	80.9	12.8	105.6
9.9	81.7	12.9	106.4
10.0	82.5	13.0	107.3
10.1	83.3	13.1	108.1
10.2	84.2	13.2	108.9
10.3	85.0	13.3	109.7
10.4	85.8	13.4	110.6
10.5	86.6	13.5	111.4
10.6	87.4	13.6	112.2
10.7	88.3	13.7	113.0
10.8	89.1	13.8	113.9
10.9	89.9	13.9	114.7
		14.0	115.5

The above formula and table is based entirely on figures obtained in local Louisiana practice throughout a period of many years. I will be more than glad to answer any questions concerning it from interested cane growers or factory owners and I hope that the data I have accumulated, and on which the above is based, may prove serviceable and helpful.

IRVING H. MORSE,
213 N. Peters St.,
New Orleans, La.

Cane From Georgia

The American Sugar Cane League has been permitted by the U. S. Department of Agriculture to obtain some 50 tons of P.O.J. 234 seed cane from Cairo, Georgia, where the U. S. Government conducts a sugar cane experiment station under the supervision of Dr. P. A. Yoder. In addition to the P. O. J. 234 cane above mentioned, it was also possible for the League to obtain from Cairo two or three tons each of P. O. J. 36 and P. O. J. 213. This may seem like a small amount, and indeed it is, in comparison with the quantity destroyed in Florida by the recent freeze, but three tons of each of these canes will plant a total of six acres, and should give enough available seed cane next fall to plant at least 150 acres.

It is interesting to note in this connection that all the P.O.J. 234 cane obtained from the U. S. Experiment Station at Cairo by the League was shipped with the roots included. The Director of the Cairo Station, Dr. P. A. Yoder, says that there are probably more good eyes per unit weight in the roots than in the above ground portion of the stalk. He wanted us to get all the good eyes possible.

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Sugar Beet Subsidies In England And The Irish Free State

(A REPORT FROM THE U. S. DEPARTMENT OF AGRICULTURE)

An interesting example of government assistance to industry in foreign countries is that of the Sugar Beet Subsidies in Great Britain and in the Irish Free State. The subsidy in Great Britain has been in effect since October 1, 1924, while in the Irish Free State the act has only recently become law. While the subsidies are not expected to make either Great Britain or Ireland independent of foreign supplies, it is thought that production of a respectable share of requirements is possible, and the subsidies are assisting materially in establishing the industry.

In 1924, the first year of the British subsidy, the total sugar beet acreage in the country was 22,400 acres, compared with only 3902 acres in 1912. The acreage for 1925, as reported by the Ministry of Agriculture, is 54,700. In view of the additional factories that have been licensed for working in October, 1926, it is expected that the 1926 area will be increased to nearly 100,000 acres.

The domestic production of sugar in England and Wales in 1925 amounted to the record figure of 58,000 short tons. Production has about doubled in each of the past three years. The total quantity of refined and unrefined sugar entered for home consumption into the United Kingdom in 1925 was 1,862,536 short tons, of which 755,011 tons consisted of refined sugar, 125,342 tons of unrefined and 982,183 tons of sugar refined in bond in the United Kingdom and later entered for consumption. Most of the imports of refined sugar come from the Netherlands, Czecho-Slovakia and the United States. Cuba supplied most of the unrefined sugar.

Under the provisions of the British Act the Government subsidizes manufacturers of beet sugar as long as manufacturers pay farmers not less than $9.55 per short ton for beets having a sugar content of 15½ per cent. When the beets have a greater or less sugar content than 15½ per cent the price paid to farmers must be increased or decreased at the rate of 6 cents per ton for each 1-10 per cent above or below 15½ as the case may be.

The amount of subsidy paid manufacturers by the Government under this arrangement depends upon the polarization of the sugar produced. Thus, from October 1, 1924, to October 1, 1928, the first four years of the ten during which the subsidy remains in force, the Government subsidizes manufacturers to the extent of $84.65 for every short ton of sugar showing a polarization exceeding 98 degrees. The subsidy decreases by stages of polarization until sugar exceeding 76 degrees but not exceeding 77 degrees is reached, for which the Government gives a bounty of only $42.00 per short ton. For the next period of three years, *i. e.*, from October 1, 1928, to October 1, 131, the subsidy is reduced by one-third to $56.44 per short ton for sugar of the highest polarization and to $27.14 for the lowest. During the final three years, from October 1, 1931, to October 1, 1934, the subsidy will be reduced another one-third, so that the amount payable by the Government will range from $28.21 per ton to $14.64 per ton according to the degree of polarization.

There is no question but that the Government subsidy to the sugar beet industry in Great Britain, given direct to manufacturers of sugar, and passed on indirectly to the farmer, has been a boon to arable farming in that country. The growing of sugar beets is finding favor with the farmers because under the subsidy they have a certain knowledge as to what the return from the crop will be when it is harvested. Moreover, realizing that the price to be received depends upon the sugar content of his beets, the farmer is encouraged to use the latest and most scientific methods of cultivation.

The following tabulation gives the acreage and production of sugar beets and the output of beet sugar in England and Wales from 1909 to 1925:

SUGAR: ACREAGE AND PRODUCTION OF SUGAR BEETS AND PRODUCTION OF BEET SUGAR IN ENGLAND AND WALES, 1909-1925:

Year.	Sugar Beets. Acreage. Acres.	Sugar Beets. Production (Washed and Topped Beets). Short Tons.	Sugar. Production. Short Tons.
1909	51	.....	.....
1910	506	.....	.....
1911	536	.....	.....
1912	3,902	a/ 23,493	b/ 2,475
1913	4,085	a/ 35,179	b/ 3,694
1914	2,334	a/ 13,235	b/ 1,431
1915	2,349	a/ 19,257	b/ 2,118
1916	151	factories closed	
1917	275	from 1916-1919.	
1918	671	.....	.....
1919	386	.....	.....
1920	3,017	a/ 21,654	b/ 2,094
1921	8,333	73,000	b/ 7,786
1922	8,409	62,000	b/ 7,852
1923	16,900	116,900	b/ 14,875
1924	22,441	202,000	c/ 26,578
1925	54,750	504,000	c/ 58,000

a/ Beets worked as reported by the British Sugar Beet Society, Ltd.

b/ As reported by the British Sugar Beet Society, Ltd.

c/ Willet and Gray's estimates. Official sources except as otherwise stated.

The Sugar Subsidy Act recently passed by the Irish Free State Government is similar in its general terms to the act now in force in Great Britain. Consul H. M. Collins at Dublin reports that manufacturers of sugar under the Irish Free State Subsidy Act will be subsidized to the extent of $106 per short ton during the first three years, $98 per ton during the succeeding five years and $96 per ton during the final two years of the ten years during which the industry is to be subsidized. Although no corroborative evidence has as yet been received by this department, these amounts are thought to be those that will be paid on sugar showing a polarization exceeding 98 degrees.

Under the Irish Free State Act the established subsidies are applicable only to the first factory to manufacture sugar from home-grown beets, whereas

under the provisions of the British Sugar Subsidy Act any factory after being approved by the Ministry of Agriculture is eligible to receive the rates of subsidy provided. Subsequent factories established in the Free State will receive such rates of subsidy as may be prescribed from time to time by the Free State Government. These rates, however, are not to exceed the rates granted to the first factory in operation. The act, says Consul Collins, is expected to result in the planting of from 5000 to 10,000 acres of sugar beets in the Free State this year.

The Irish Act further provides, according to a report received from Mr. J. C. Speaks, Assistant Trade Commissioner in London, that if at the time of the manufacture of sugar a customs duty is chargeable on the importation of sugar, the subsidy rates as specified shall be reduced by the amount of such duty. These provisions effectively assure the Irish producer of a net advantage over sugar importers.

Sugar Beets In Louisiana

(By Dr. Chas. E. Coates.)

The experiment on making sugar from sugar beets in Louisiana, which is now being carried out at the State University, is of particular interest at the present time. The unprecedented condition of the last cane sugar season has brought the industry in Louisiana almost to the bottom of the wave and it is difficult to say what the future holds. Those best qualified to judge, however, think that conditions will steadily improve and they who can survive will find prosperity next year and in the future. Beet sugar will make this prosperity certain if it can be established as a supplementary industry to cane sugar.

Beets ripen in Louisiana when the cane sugar houses are not operated and much of the cultivation is done when sugar cane does not need agricultural attention. It is calculated that one can produce a ton of sugar from beets in Louisiana for much less money than in Colorado—and there the beet sugar companies are uniformly successful in a financial way. To test this out practically a number of planters have agreed to plant about five acres each in beets and to deliver them free to the Experiment Station in Baton Rouge. In all, about one hundred and twenty acres of beets will be planted, which will produce about two thousand tons of beets, if the season is good.

To slice them, a beet sugar house, with a capacity of two tons an hour, is now being erected at the University and will be ready to run by the first of May. This is the first time an experiment of this kind has ever been made and it has attracted much attention and aroused great interest amongst those in high places in the sugar industry. Mr. W. L. Petrikin, President of the Great Western Sugar Co., the most successful sugar company in America, has written to say that he will come to Louisiana late in the spring for the purpose of looking over the situation personally. Mr. Petrikin is recognized as one of the ablest men in the sugar industry which this country has produced. He is a man of vision and is not only an organizer of marked ability but also a financier and a technical man at the same time. The fact that he has manifested this interest is well worth the consideration of all those who have at heart the prosperity of Louisiana.

P.O.J. 234 Keeps Well After Cutting

The following is an interesting item culled from a recent letter written by Director W. R. Dodson, of the Louisiana Experiment Station, to the Editor of the Bulletin:

Dr. Dodson says, in speaking of the P.O.J. canes: "I don't think we have enough information yet to write very much about any of these canes. We can take up some points that have been discussed and add what information we have supplied on those particular points. For instance, we made a series of analyses of P.O.J. 234, to determine the rate of deterioration after the cane was cut and put in the windrow. You will recall that it has been the general impression that P.O.J. 234 would deteriorate rapidly in transit or in storage, or in the windrow. Our experiments have indicated that it holds up very well indeed and Mr. Taggart has prepared an article on that subject that he will send to you for publication or give to the daily press, as may seem best".

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P. O. J. 234 Cane, Windrowed and Cut

By W. G. Taggart
Assistant Director Louisiana Experiment Station

During the summer of 1925, when interest in new varieties was running high in the Louisiana sugar belt, some statements from other countries in regard to the keeping qualities of P.O.J. canes were brought to the attention of our planters. According to that information it was highly desirable to mill P.O.J. 234, etc., within twenty-four hours after harvest and necessary to mill within thirty-six hours. Since much cane in Louisiana has to go over for a greater length of time than two or three days before going through the mill, these statements caused a great deal of concern amongst planters who were looking to P.O.J. canes as a measure of relief.

In order to test the keeping qualities of P.O.J. 234 under Louisiana conditions, two series of experiments were carried out at the Sugar Experiment Station at Baton Rouge. The first of these was with cane windrowed after a bud-killing freeze, and the other was with the same kind of cane, cut for the mill fifteen days after the freeze and left in a pile.

In each experiment the usual Louisiana method of handling cane was resorted to and on later days, as indicated, samples taken, passed through a handmill and tested.

Neither the windrowed nor the harvested cane show deterioration due to inversion. Both windrowed and harvested cane show some loss due to evaporation, as indicated by rising Brix reading. This, however, is about at a normal rate and is to be expected.

There are some discrepancies in these tests. For instance, Table II, cut three days, is low. These discrepancies are partially due to the extreme difficulty in getting uniform samples, owing to the fact that some stools in this cane were top-killed by borer, and those were extremely low in sucrose, as shown by the following tests given in Table III:

TABLE I

P. O. J. 234 Windrowed December 7, 1925

	Brix	Sucrose	Apparent Purity
Fresh	13.0	9.17	70.53
Windrowed—Days			
1	13.3	9.72	77.08
3	13.5	9.76	72.29
4	14.5	10.62	73.30
5	13.5	9.90	73.33
6	15.1	12.05	79.67
7	14.5	10.95	75.52
11	14.6	11.22	76.85

TABLE II

P. O. J. 234 Cut for Mill December 21, 1925

	Brix	Sucrose	Apparent Purity
Fresh	14.0	11.47	80.19
Cut—Days			
1	14.8	11.51	77.77
3	12.7	8.92	72.52
4	15.6	13.08	83.85
6	15.6	13.13	84.17
14	15.6	13.12	84.64

TABLE III

Borer Damaged Stools

December 7	Brix	Sucrose	Purity
Stool 1	8.00	3.90	48.70
" 2	8.40	5.09	60.60
" 3	11.40	6.76	59.30

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Similar tests with this variety, as well as other P.O.J. canes, will be continued another year, and an effort will be made to determine the action of these canes both before and after a bud-killing freeze. From experiences reported, in other countries, we would have expected a considerable drop in purity by the fourth day, but in our tests we found to the contrary.

Minimum Temperatures During Tests

November	23	31°
"	24	30
December	5	29
"	8	28
"	17	32
"	18	32
"	23	25
"	24	25
"	26	32
"	27	34
"	28	19
"	29	26

A Sucrose Contract For Cane

A development of major importance to the Louisiana sugar industry occurred on Mar. 27, 1926, when, at a conference between representatives of the Houma Agricultural Credit Association and the Hartford Insurance Co., an agreement was arrived at covering a clause that is to be inserted in the cane contracts of all borrowers through the Agricultural Credit Association. This clause provides for the sale and purchase of cane on a sucrose basis, and the schedule adopted, after several hours spent in the careful consideration of every element involved, was as follows:

SCHEDULE

11%-12% sucrose, $1.00 per cent; over 12%, 1¢ for each full 1/10%; under 11% to 10%, 1¢ deduction for each full 1/10%; under 10% to 9%, 2¢ deduction for each full 1/10%. Under 9% actual sugar content value less weighing, loading and freight, and $1.50 per ton for mill.

Sucrose	Cents Per Cent	Net to Grower			
		4.00	4.25	4.50	4.75
14.0	120	4.80	5.10	5.40	5.70
13.8	118	4.72	5.02	5.31	5.61
13.6	116	4.64	4.93	5.22	5.51
13.4	114	4.56	4.84	5.13	5.42
13.2	112	4.48	4.76	5.04	5.32
13.0	110	4.40	4.67	4.95	5.23
12.8	108	4.32	4.58	4.86	5.13
12.6	106	4.24	4.50	4.77	5.03
12.4	104	4.16	4.42	4.68	4.94
12.2	102	4.08	4.33	4.59	4.84
12.0	100	4.00	4.25	4.50	4.75
11.8	100	4.00	4.25	4.50	4.75
11.6	100	4.00	4.25	4.50	4.75
11.4	100	4.00	4.25	4.50	4.75
11.2	100	4.00	4.25	4.50	4.75
11.0	100	4.00	4.25	4.50	4.75
10.8	98	3.92	4.17	4.41	4.66
10.6	96	3.84	4.08	4.32	4.56
10.4	94	3.76	4.00	4.23	4.47
10.2	92	3.68	3.91	4.14	4.37
10.0	90	3.60	3.83	4.05	4.28
9.8	86	3.44	3.65	3.87	4.08
9.6	82	3.28	3.48	3.69	3.89
9.4	78	3.12	3.32	3.51	3.70
9.2	74	2.96	3.15	3.33	3.52
9.0	70	2.80	2.98	3.15	3.33

The action taken at this conference will be very far reaching, for it will in all probability result in the general adoption of the same schedule by numerous parties, not operating through the Agricultural Credit Association, and serve as a guide for all who have been attempting recently to formulate some basis for

the purchase of cane on a fairer system than merely its weight.

Reflecting, as this schedule does, the joint conclusions of the representatives of the Agricultural Credit Association, who are in a sense the trustees of Federal funds, and the agent and attorney of one of the largest insurance companies in the United States, it carries a great deal of prestige. As will be seen from a perusal of the schedule, there is no variation in the amount to be paid for cane testing from 11% to 12% sucrose. When the cane tests over 12% sucrose the price goes up 1 cent for each full 1/10 increase; under 11% sucrose and down to 10% there is 1 cent deduction for each full 1/10; under 10% and down to 9% there is 2 cents deduction for each full 1/10. When the cane tests under 9% the grower is to get actual sugar content value less cost of weighing, loading and freight and less $1.50 for cost of manufacturing.

The representatives of the Hartford Insurance Co. sought a basis that would be favorable to them as insurers of the cane, their efforts to accomplish this automatically making them the natural guardians of the cane sellers' interests. The representatives of the Agricultural Credit Association sought to arrive at a solution that would safeguard the cane growers and be fair to the Insurance Co. and yet not make it difficult or impossible to get a factory to buy the cane. All concerned believe the outcome has accomplished the objects desired.

Mr. Irving H. Morse took part in the conference, having been retained as an expert consultant, and the conference was presided over by Mr. Frank L. Barker, a member of the Board of Directors of the Agricultural Credit Association of Houma.

Holloway Hits Hibernating Piles

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF ENTOMOLOGY
Washington, D. C.

Southern Field Crop Insect Investigations.
Sugar Cane Insect Laboratory,
8203 Oak Street,
New Orleans, Louisiana.
March 20, 1926.

MR. REGINALD DYKERS,
American Sugar Cane League,
New Orleans, La.
Dear Mr. Dykers:

A recommendation for the control of the cane borer which originated with one or more plantation field men is that piles of cane trash be left on the headlands or on sticks or branches laid over the ditches, these piles being known as hibernation piles. The idea is that the egg parasite of the borer will take refuge in them. In other words, it appears to be assumed that the parasite knows that the trash over a whole field will be burned, but that a few armfuls left for its benefit will be preserved. Of course this assumption is not tenable. The great number of parasites over the field will doubtless be destroyed by fire, while a few which might possibly be in the piles will be saved.

It has seemed to us, however, that if this recommendation could do little good it could likewise do no harm, and we have not opposed it, but it now becomes evident that the hibernation piles may be dangerous in preserving the borer itself. We have recently been called to a large plantation, where borers were reported in the hibernation piles, which at that place are on the headland. We found that even after the recent heavy rains the insides of the piles were perfectly dry, and living borers were in some of the cane tops. The outer layer of trash sheds water like a thatched roof, perfectly protecting the tops underneath.

Plowed-under trash was also examined in the same neighborhood, but it was found to be well decayed. The tops were souring, and the remains of some dead borers were found in them.

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We recommend the non-burning of the trash and the covering of it lightly with earth. This causes the trash to rot, as it is exposed to the moisture of the earth and the air, and catches and holds the rain water. It soon becomes unfit as food for the borer. If, on the other hand, the trash is piled up it protects itself from the weather, does not rot, and remains as suitable food for any borers which it may contain. In due time they will emerge as moths, and the moths will fly to the young sugar cane and corn plants to deposit their eggs. Thus, the hibernation piles may preserve borers which would normally be destroyed in the plowing-under process.

It is probable that planters who have the hibernation piles should destroy them. Borer moths will be emerging very soon. At least planters should examine the trash in these piles, cutting open the cane tops, to make sure that no borers are present. From our observations, it is likely that large borers in the best of condition will be found in most of the piles.

Very truly yours,
(Signed) T. E. HOLLOWAY,
W. E. HALEY,
Entomologists.

Comments From Dr. Cross

Being curious as to whether the year 1925 was a banner borer year in other places than Louisiana an inquiry was made of Dr. Wm. E. Cross, Director of the Argentine Sugar Experiment Station as to whether he had noticed any unusual prevalence of borers in the Tucuman district in that year. A letter has just been received from him in which he says:

"In reply to your letter we would say that it is quite true that the infestation of borers in the Java canes in this country was quite surprisingly large in the crop of 1925. We had always found, previously, as you remember we have stated at various times, that the Java varieties, especially P.O.J. 36 and 213, were particularly resistant to this pest, owing to their great hardness and fiber-content. Well, when I returned from the States last July the first thing I heard about was the considerable borer damage in the Java canes, and on investigating the matter of fact the borer had been putting in quite a lot of deadly work. It was not so bad by any means in the Java as in the softer varieties, yet the outstanding fact was that for the first time, last year, the borer became a pest to be reckoned with in the Java canes.

"I am sorry to hear of your extremely cold winter, and of the disastrous results of the freeze of the 15th of January on your cane in South Florida, especially because this will put you back quite some in the propagation of the new canes. It would appear that the United States is practically like the Argentine in this respect: that there is practically no frost-free point in the whole country. We of this station have had the same heart-rending experience on the various occasions that we have tried to produce cane seed by crossing different varieties in this country."

In another letter written by him at about the same date as the above and published in Facts About Sugar of Mar. 20, 1926, Dr. Cross says:

"I have been reading about the Louisiana situation in every number of FACTS ABOUT SUGAR as they have arrived here, and have read what has happened with regard to the unexpected tonnage of the old canes and the borer damage in the 234. I am still convinced that I am right about the Louisiana situation, and that it will be impossible to go on for long with the old canes, badly infected as they are with mosaic. It is the same every-

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where where the mosaic gets in. In a report on conditions in the British West Indies by R. A. Alston, (Journal of the Board of Agriculture of British Guiana, Jan. 1925, page 1; also referred to in the International Sugar Journal XXVII, page 293; and in Botanical Abstracts, Vol. XIV, page 1406), he states that the loss from a hundred per cent infection (such as you have in Louisiana) is not less than fifty per cent. Speaking of conditions in Spain, my friend the Count Agrela, writes under date of January 7, 1926: 'The mosaic disease continues to cause enormous damage, producing disastrous harvests. I believe that this year the old canes will be abandoned, and new varieties will be planted. Of these, up to now, the P.O.J. 234 is the one which appears to give the best results.'

"I think the special attack of the borer on the 234 in Louisiana this year is quite fortuitous, and that when considerable extensions of that cane exist, it will be less damaged than the native canes. I note that you will have a considerable amount of P.O.J. 36 and 213 for propagating. I am very glad to hear this, as I am sure they have a great future in Louisiana. I think, as it was in this country, the buyers of today will be the sellers of tomorrow, when the one who did not buy will have to pay through the nose for it. Try to keep your nursery plantings free from mosaic.

"Of course, better canes may be found. This I think would be a surprising piece of luck, judging by our experience, as since we recommended the Java canes ten years ago we have been experimenting with what is probably the best collection of canes in any station anywhere, without finding a single cane to beat them."

The Value Of Negative Results

(By T. E. Holloway)

What good is an experiment which fails, or which is likely to fail before it is tried? The writer has recently observed that the point of view of the scientific worker is not appreciated by the planters in general. It is believed that the following account of an experiment just completed will give the planters an opportunity of seeing an experiment through the eyes of the research men.

An over-enthusiastic worker in the tropics wrote to an American chemical company and gave them a wonderful endorsement of one of their products against the cane borer, especially in Louisiana. It seems that he had tried the product in a small way, had obtained good results, and while he realized that the treatment could not be used under tropical conditions he thought it excellent for Louisiana.

This was a rare opportunity for an unscrupulous company, which could have sent out a salesman with a magnetic personality and probably sold their product, backed as it was by an endorsement from the tropics, to more than one Louisiana sugar planter.

But the company concerned is not unscrupulous. It maintains a research organization, and it sent one of its own entomologists to co-operate with the Sugar Cane Insect Laboratory in finding out whether the results from the tropics were right. Mr. Theodore Landry, of Willswood Plantation, generously allowed the use of a building and some equipment, and a large number of experiments were conducted.

As the writer had expected, the results were not satisfactory, but here was definite proof which would set at rest that particular theory. There is now no danger that the theory will be exploited at the expense of the Louisiana sugar planters.

The writer has recently been told that if a research man goes out on a plantation and runs an experiment all sugar planters believe that he endorses that experiment and that he expects them to operate their plantations accordingly. It is unfortunate if this belief is widely held. Ideas for plantation improvement have to be tested, and nothing which a research man can devise can take the place of an experiment on an actual plantation. Many experiments must fail for one which succeeds. It is said that Luther Burbank throws away 100,000 plants for every one which he thinks worthy of propagating.

Negative results often point the way to other experiments which will give positive results.

Progress Of Sugar Cane Irrigation Experiments In 1925

Written especially for the Sugar Bulletin

By John G. Sutton

Junior Drainage Engineer, U. S. Bureau of Public Roads

An average increase in yield of three tons per acre and an estimated increase of four hundred eighty pounds of sugar recovered per acre are the results obtained in cane irrigation experiments during 1925. Although these results were obtained on small plots it is believed that had the plantation been irrigated on a similar basis that the average benefit would have been at least as great.

The Department of Agriculture has been conducting sugar cane irrigation experiments in co-operation with the Columbia Sugar Company, near Franklin, Louisiana, for four years. The results of the first three years' work indicated that the irrigation of sugar cane is a profitable undertaking for the Louisiana planter, while the results of 1925 further tend to confirm this view. The first two years were wet years with no irrigation necessary. The third year, 1924, was an unusually dry one in which an average increase of 5.6 tons per acre due to irrigation was obtained. The 1925 season began with a severe drouth and ended with a very wet fall, with the above-noted increase of three tons per acre due to irrigation. The profits obtained from irrigation during these dry years would certainly more than pay for the losses of the wet years. Irrigation furthermore acts as a stabilizing influence on the cane industry as it makes the planter partially free of weather uncertainties.

The 1925 experiments were conducted on small plots of Fall Plant cane in light land. Eight plots of cane were used, each plot being around one-third of an acre in area.

Different times and methods of irrigation were used in an effort to determine how and when to irrigate. In the flooding method of irrigation, water was backed up in the middle to an average depth of three inches. A wooden box called a spillway was provided in one of the lower dams so that when one pond filled up the water ran over into the next pond. The ponds were filled one day and the water that remained in them the next morning allowed to run out. In the furrow method of irrigation a small stream of water was allowed to run down the middle for four to eight hours continuously. To determine the most effective time of irrigation one set of the plots was irrigated seven days after the last

rain or irrigation while the other group was irrigated ten days after.

The following table is a summary of the results:

Number of Plots	Treatment of Plots	Average Production of cane tons per acre	Increase due to Irrigation tons per acre	Estimated Increase in pounds of recovered 96° Sugar per acre due to Irrigation
2	Flooded every 10 days	17.8	3.0	570
2	Flooded every 7 days	17.4	2.6	380
1	Irrigated through Furrows—7 days	19.2	4.4	490
3	Check Plots—not irrigated	14.8		
	Average		3.1	480

It may be noted that the estimated increase in sugar was due partly to higher tonnage and partly to higher sucrose and purity of the irrigated plots.

The table shows that the largest tonnage increase was obtained by irrigating through furrows at seven-day intervals. However, due to the sucrose and purity content of the plots flooded every ten days the estimated increase in sugar per acre was highest for those plots. It would be difficult to determine the best method and time of irrigation from these results alone. All methods tried, however, were effective in that each gave a substantial increase both in tonnage and purity of juices over the non-irrigated plots.

Irrigators must be very careful in irrigating Plant cane as damage may be done to the succeeding stubble crop by excessive irrigation. The 1925 stubble crop in many places showed bad effects from the irrigation of the previous crop. It was especially noted in the lower end of the cuts where the water would pond perhaps as high as the top of the row before running over the headland. The damage to the stubble was more marked in the heavy black lands than in the light land. It is believed that light and frequent applications of water to the plant cane and an early application of water to the stubble crop to get it started will prevent any damage to the stubble crop.

How cheaply cane irrigation may be accomplished when practiced at the same time rice is raised was demonstrated in 1925. The same pumping plant was used to irrigate both cane and rice. The economy of this system is apparent where rice may profitably be raised on the same plantation as sugar cane. The amount of water that was needed was diverted from the rice ditch and forced to the high points of the cane field and allowed to run down the furrows across each succeeding headland.

These experiments were carried out on the plantation of the Columbia Sugar Company, near Franklin, Louisiana, Mr. J. M. Caffery, Manager. They were handled on a co-operative basis between the sugar company and the United States Department of Agriculture, Division of Agricultural Engineering, Mr. S. H. McCrory, Chief. The writer was field representative of the Department.

As Others See Us

The 25th Annual Report of the Queensland (Australia) Bureau of Experiment Stations, issued Dec. 15, 1925, contains some abstracts from a report made by a Mr. Bell, who is described as a "Pathological Scholar at present at Berkeley University, California". Mr. Bell, it appears, has been visiting a number of sugar producing countries, and has been making a study of the sugar industry in each one. Concerning Louisiana he says:

> "My visit to Louisiana was a great lesson in impressing upon me the dire possibilities of inadequate disease control.
>
> "The percentage of the infection of the cane by Mosaic disease is at least 99 per cent, the odd 1 per cent being composed of new canes which are just being introduced as a means of combatting the ravages of the Mosaic. There is also very considerable trouble from the borer and root rot and thus the cane is unable to withstand a dry season."

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History of Kavangire Sugar Cane In Porto Rico

An Account of the Introduction and Spread of Kavangire, a Disease Resisting Variety.

WRITTEN FOR THE AMERICAN SUGAR CANE LEAGUE

By E. W. BRANDES

In the year 1915 it was noted by a Porto Rican agriculturalist that the sugar cane in certain fields in the vicinity of Cambalache Central near Arecibo were yellowed and had a generally unthrifty appearance.

This agriculturalist called the attention of Mr. John A. Stevenson, pathologist at the Insular Experiment Station at Rio Piedras, to this condition and Mr. Stevenson, recognizing the importance of the observation, took immediate steps to investigate the cause. He carried on a large number of experiments on the disease and published a number of accounts describing the symptoms and recording various observations and experiments. His work and that of others soon established the fact that it was an infectious disease that came to be known as mosaic. In a very short time, the disease spread over the whole western end of Porto Rico and decrease in yields caused by it amounted to about 40 per cent where the infection was complete. The amount of loss tapered off in direct ratio to the absolute amount of infection but for all practical purposes it may be considered that infection was complete, that is 100 per cent of the plants in all fields were infected west of a line from Arecibo on the north coast to Ponce on the south coast. Largely as the result of attention directed to this disease by Mr. Stevenson great interest was taken in it by the planters and through them the Governor of Porto Rico, Mr. E. Mont Reilly, in 1917, appealed to the Department of Agriculture, through the State Department, to take steps leading to the control of the disease. An increase in the appropriation of the Department of Agriculture of $20,000 was made by Congress. This amount was allotted to the Office of Sugar-Plant Investigations, Bureau of Plant Industry, and steps were immediately taken to obtain the services of competent experts to carry on the investigations. Mr. F. S. Earle was appointed in July, 1918, and was sent to Porto Rico to begin a preliminary study. The writer was also appointed in July, 1918, but was unable to take up active duty until discharged from the Army in February, 1919. Professor Earle noted shortly after his arrival that a certain variety of sugar cane consisting of a 50-foot row in a varietal test plat at the Porto Rico Agricultural Experiment Station, Mayaguez, was not affected with mosaic, although surrounded by varieties which were practically 100 per cent infected. This variety was Kavangire which had been sent, together with a number of other varieties, to the Experiment Station about three years previously by Mr. George Fawcett, who was formerly pathologist of the Mayaguez Station. Professor Earle recognized the importance of this apparent immunity and collected all available information on the variety with a view of judging its merit as a commercial cane. It soon become apparent that while the variety had certain disadvantages it was practicable to make sugar from it. A very similar variety, Uba, is the principal variety grown in Natal. On account of its apparent immunity to mosaic this variety seemed to offer the only possibility as a solution of the mosaic problem. It should be stated here however that only on account of the urgent necessity for a variety of cane that would give good yields of cane despite the presence of mosaic was this variety considered. Under normal conditions, that is in the absence of an epidemic of disease, it is unlikely that Kavangire would survive in competition with other more favored varieties. The present writer was in Porto Rico during the period from March 1, until May 15, 1919, and made arrangements with the Director of the Porto Rico Agricultural Experiment Station to increase on the station grounds seed of this variety, if it were possible to obtain a considerable amount from Argentina for propagating purposes. Professor Earle resigned shortly afterwards and nego-

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tiations for seed of Kavangire were carried on directly from Washington with the Director of the Agricultural Experiment Station of the province of Tucuman, Argentina.

A cablegram was sent May 17, 1919, to Mr. Fawcett inquiring if seed of the variety of the Kavangire was available in quantity at Tucuman and whether it was practicable to ship to Porto Rico from there in ton lots. Mr. Fawcett answered by cable on May 17, that it would be practicable to send the seed packed in powdered charcoal in barrels and estimated the cost of the seed and packing at $80 per ton. On May 31, the Secretary of Agriculture took up with the American Ambassador at Buenos Aires, through the Secretary of State, the question of securing ten tons of this seed from Tucuman. A requisition for $900 drawn on the account of the Office of Sugar Plant Investigations was sent to Mr. Fawcett in payment for the seed. Mr. Fawcett, having secured permission from the Argentine Government through representations by the American Ambassador, prepared the seed for shipment and it was started by rail for Buenos Aires where it was transferred to a steamer bound for Brooklyn, New York. Upon arrival in Brooklyn, August 19, the shipment was inspected by the writer and arrangements were made by the Government Dispatch Agent at New York City to transfer the shipment, which consisted of 80 barrels, to a steamer bound for Porto Rico. A cablegram was sent to Professor Earle, who was still in Porto Rico although no longer connected with the Office of Sugar-Plant Investigations, requesting that he secure land and supervise planting of part of the seed cane. Mr. D. W. May, Director of the Porto Rico Agricultural Experiment Station at Mayaguez, was requested by the Chief of the Bureau of Plant Industry to co-operate in planting the cane on the Experiment Station grounds, in accordance with verbal agreements previously made. In all conferences and correspondence it was made perfectly plain that this seed was to be planted under the control of the United States Department of Agriculture, isolated from other sugar cane, so that it could be inspected at intervals for the purpose of determining whether any diseases or pests had been carried with the planting material. It was the intention of the Office of Sugar-Plant Investigations to distribute seed of this variety only after it had grown for one generation under the control of the Department. Owing to congestion of passenger traffic during the fall of 1919, it was found impossible for the writer to accompany the shipment to Porto Rico for the purpose of supervising planting, as had previously been arranged. The shipment arrived at San Juan, Porto Rico, on September 4, and was received by Professor Earle, who planted the contents of 37 barrels at the Insular Experiment Station, Rio Piedras. Five barrels were sent to the Central Carmen, 5 barrels to Central Plazuela and 25 barrels were shipped to the Porto Rico Agricultural Experiment Station at Mayaguez. A letter from Professor Earle, received September 16, indicated that Professor Earle had taken a trip to Mayaguez and found, much to his surprise, that Mr. May had not planted any of the seed on the Experiment Station grounds as had been agreed, but had simply distributed it in barrel lots to various planters. In a letter written August 29, Mr. May had assured Professor Earle that he would plant it all immediately upon its arrival at the Station. On receipt of this intelligence, I immediately wrote to Mr. May and told him that his disposition of the seed was not at all in accordance with the plan agreed upon and asked him for the names of planters to whom the cane had been distributed, so that it would be possible to visit their plantations and inspect the cane. I also informed Mr. May that it would be necessary for us to claim the first crop from the plantings in order to make a more equitable distribution of seed of this valuable variety among the planters. A reply from Mr. May indicated that he did not consider such a thing practicable and he failed to give the names of planters to whom he had distributed our cane. In addition to the seed from Argentina Mr. May distributed the small amount of seed of Kavangire secured from the variety row test, which as was mentioned attracted Prof. Earle's attention on account of its apparent immunity. Mr. May

secured also some seed of a variety from the island of St. Croix, which fortunately did not grow, as it was later suspected of being an inferior variety, Zwinga, instead of Kavangire.

In August, 1920, the increase of the seed planted by Professor Earle at the Insular Station, Rio Piedras, was advertised in the local papers and distributed free of cost to applicants in the order that their applications were received. The increase from the 37 barrels planted the previous September was sufficient to plant 40 to 50 acres.

In April, 1922, Professor Earle, then field superintendent at Aguirre, Central Aguirre, Porto Rico, wrote as follows: "I am not getting about over the Island much these days and so had not kept track of the really tremendous boom in planting Uba (Kavangire) cane. Mr. Maxwell, of Guanica, was here the other day and told me of it. * * * Central Eureka, near Mayaguez, had 500 acres this year and will have 1,000 acres next year. Guanica had 200 acres in Anasco Valley this year besides considerable plantings in other districts and is preparing to bush the planting very rapidly. Of their 3,000 acres in Anasco only about half of it is in cane this year—mosaic having put them out of business on the balance. They plan to plant it all back in Uba just as fast as possible and will plant it heavily in some of their other districts also. As you may have heard Colon (Director of the Insular Station) has left the station and is now in charge of the fields of Central Plazuela. He tells me that back colonia (farm) Floerida back in the limestone hills that mosaic has gotten the best of them and the acreage in cane has been greatly reduced. I gave the manager of this place one barrel of the Argentina seed to send and it has given him much better results, 40 to 50 tons per acre on these dry lands with sucrose up to 16 and 17%, so that he will plant the whole area in Uba.

We had two acres in one of the Aguirre irrigated estates. It gave 81 tons per acre, but it had not ripened properly and sucrose and purity were low. Still it gave over six tons of sugar per acre. One man near San German had a two-acre field which he sold for seed getting $500 for the standing cane. And so it goes all along the line. We certainly started something when we got in that Uba seed." By the end of the 1921-22 growing season Kavangire had made itself felt in Porto Rico to the extent that numerous comments began to appear in the sugar trade journals. In "Facts About Sugar" for November 18, 1922, Mr. R. L. Page, Superintendent of Cultivation, South Porto Rico Sugar Company, in an article entitled "Uba Cane In Porto Rico" states that Uba had been found by his company to be very valuable for increasing tonnage on poor lands where mosaic was not a problem. The highest yield we have obtained in the Anasco District from Uba to date is 54.48 tons per acre. This was on average land and gave 14.9% sucrose, giving 6.13 tons of sugar per acre. The majority of our plantings of Uba cane in that district have been on lands which have not been considered fit for raising cane at all and on these lands we have obtained a yield of something over 30 tons to the acre."

An article entitled "Cane Varieties at Guanica" by E. H. Barrow, in "Facts About Sugar" for December 16, 1922, describes Uba as follows: This cane has been giving very promising results, especially on dry hillside lands where other varieties do not do well. As it takes a long time to mature it should be planted as early *Gran Cultura* and given about 18 months before harvesting. The sucrose content is as a rule low, but in some instances it is good, one instance of which may be mentioned. The canes from a plot of one-third acre reaped last season yielded 5.33 tons of available sugar per acre, with sucrose 14.2% and purity 80.7%. No ratoons of this cane have as yet been reaped, but to all appearances good yields will be obtained from ratoons. It is very resistant to insect pests and fungoid diseases and is immune to mosaic.

In an article "Sugar Cane Varieties in Northern Porto Rico" in "Facts About Sugar," of January 13, 1923, Messrs. E. D. Colon and A. M. de Andino of the Plazuela Sugar Company, stated "On December 20, 1920, we received from Central Corsica two bags full of seed pieces of the Kavangire variety. These seeds were planted on this date in low land at about 700 meters from the factory and near the town of Barceloneta, placing four pieces in each hole. The growth was very luxuriant and the cane was cut during the first half of April, 1921, at 14 months of age.

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The tonnage produced was 640.2 cwt. (32.01 tons) on three-fourths of an acre, or at the rate of 42.68 tons per acre." These results, it will be noted, were with plant cane. With first ratoons results were reported in the following words: "These ratoons were cut in the first half of May, that is at 13 months. They produced at the rate of 800 cwt. (40 tons) per acre and with only one cultivation, fertilization and earthing, the cane closed. The fertilizer used was 12-8-3 at the rate of 400 pounds per acre. Juice analysis: Brix 18.30; Sucrose 15.52; Purity 84.80."

Mr. R. Menedez Ramos, Director of the Insular Experiment Station in Porto Rico in an article "Recent Work With Sugar Cane Varieties in Porto Rico" published in the Louisiana Planter and Sugar Manufacturer, November 24, 1923, says in part "A great deal of interest has been raised in the Island during the last few years by some northern India cane immune to mosaic and gumming disease. The Uba cane has proved its worth by its absolute immunity to mosaic and gumming and its wonderful vigor and ability to ratoon well even in the red clay hills. This cane behaves so very differently in regard to its sucrose content under various types of soils and climatic conditions that it is still an unknown quantity to the cane agronomists of the Island. The most conflicting opinions about the merits of this cane were recently discussed at the Annual Meeting of the Sugar Technologists of Porto Rico, mostly by the technical men who have planted considerable acreages of the variety. It has given good tonnage both as ratoon and plant wherever planted, production in the field of over 90 tons being reported from some places. * * * The most remarkable experiment in the field and factory, however, was carried out during the crop of 1922-23 at Central Eureka. The variety seems to be especially well adapted to that part of the Island and the average yield in a 1500-acre planting was fully twice as heavy as the former crops harvested from other varieties in that disease-infected region. The cane was taken very well by the mills; normal extraction was about 20% less than with the usual varieties, but sucrose extraction was about the same. Due to the high percentage of fiber in the cane the Eureka factory grinding 90% of its crop of this variety had enough bagasse to run without extra fuel. The average yield of commercial sugar per cent of cane (rendiment) was approximately 9.4% for the crop. When one considers that the other varieties with half the tonnage in the same area yielded only around 10.5% rendiment, it is clearly seen that the Uba has proved of immense value on the western coast of the Island. It undoubetedly has played a very remarkable role in the history of sugar industry in Porto Rico."

In an article appearing in 1923, in "Facts About Sugar," it was estimated that 62,000 acres of Kavangire cane were planted in Porto Rico by the fall of 1922 from the small lot of seed imported in 1919. Such a phenomenal increase conld only have been made possible by conserving practically all of the increase for seed, and extending it to the limit. It indicates clearly the degree to which the planters were driven in their frantic efforts to secure tonnage for the mills. In regard to percent sucrose and purity they felt they could sacrifice something in favor of sugar per acre.

In general, the comments on Kavangire have been

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very favorable, although weaknesses of the variety have been pointed out. It is the opinion of the great majority of commercial cane planters in Porto Rico that this variety, on account of its disease-resisting qualities, enabled the sugar companies in western Porto Rico to survive a period which would have been the ruination of them had not this variety been discovered and distributed.

Just recently (January, 1926) in the Annual Report of the Porto Rico Agricultural Experiment Station 1924, attention is called to the fact that complete ruin of the industry was averted by the work of the United States Department of Agriculture. Appreciation of the Porto Rican planters was indicated by their presentation to the Experiment Station of a Loving Cup and a memorial reading as follows:

"MEMORIAL OF THE AGRICULTURISTS OF THE WESTERN PART OF PORTO RICO TO THE PORTO RICO AGRICULTURAL EXPERIMENT STATION."

"Whereas the sugar industry in this part of the island was menaced with ruin on account of the mosaic disease, which had invaded its cane fields;

"Whereas the Porto Rico Agricultural Experiment Station, of the United States Department of Agriculture, introduced in 1919 some barrels of cuttings of Uba Natal cane, commonly known as Kavangire, or Japanese cane, which is immune to this disease;

"Whereas from these seeds were propagated the extensive cane fields now existing in all this region and the industry was thus saved from destruction: Be it therefore

"Resolved, By the undersigned, to present this memorial to the Porto Rico Agricultural Experiment Station in testimony of gratitude and in remembrance of the success achieved in the furtherance of its honor and of our welfare.

"Mayaguez Sugar Co. (Inc.); M. Fajardo; Enrique Vivoni; Juan Ortiz Pericchi; Central Eureka (Inc.); M. Fajardo, President; Central Coloso (Inc.); Gmo. Cabrera; Ana Maria Sugar Co., pp. R. Valdes; Sucs. de R. Valdes, R. Valdes; Enrique Lopez Delgado; Juan A. Monagas; Juan Angel Tio; Alfredo Ramirez; Russel & Co., Sucs. S. en C.; Sucs. de Bianchi; Jaime Annexy, Jr.; Celedonio Carbonwell, pp. Manuel Alcaraz; Rodolfo Colberg; Juan Acaron Correa; Clemente Javierre."

It may be mentioned incidentally in passing that in their enthusiasm and gratitude for what had been done for them these Porto Rican planters ascribed to the local experiment station the credit for this achievement. The local experiment station deserves credit for having co-operated with the Office of Sugar-Plant Investigations and for having assisted in distributing the variety after its value had been demonstrated and the planting material imported from Argentina by the personnel of the Office of Sugar-Plant Investigations, Bureau of Plant Industry.

The remakable history of the variety Kavangire in Porto Rico is an illustration of what can be accomplished by intensive study and prompt action on the part of the authorities. It is unlikely that a more complete change of cane varieties has ever been witnessed than was the case in western Porto Rico between the years 1920 and 1923. It is not claimed that the ideal cane variety has been found for this region. In fact, it may be truthfully said that such a thing is impossible as there is always room for improvement. It is likely that the acreage of Kavangire will decline as other immune or at least mosaic tolerant varieties, better adapted to meet the conditions, are tried out and adopted. As a stop gap to tide over the period of depression caused by decreased yields Kavangire proved to be invaluable. It is significant that all of the sugar companies that extended their planting of Kavangire to the fullest extent are still in business.

We Have Among Us—

We have with us today Mr. W. L. Petrikin, President of the Great Western Sugar Co. of Denver. He comes from the wide, open spaces of Colorado to sniff our Louisiana air, and perchance some hospitable law breaker will give him, between his sniffs, a little snifter. At least we hope so, and may be he hopes so, too.

Mr. Petrikin comes among us on a mission of generous complexion and helpful import. He is going to look at our sugar beets and tell us what he thinks about them—not just what he thinks about them in an abstract or academic way, but what he thinks about them as a tangible asset to our sorely tried Louisiana sugar industry. He brings with him several technical observers, members of his staff, and he is going to look through their eyes as well as his own.

To grow sugar beets in Louisiana one must violate some long established theories, but the world's progress has been built on the rape of settled customs by bold adventurers. We have among us several industrial iconoclasts, Von Phul, Kidder, Coates, Supple and others of that ilk who plan to put the cultivation of sugar beets and the manufacture of sugar from them on a substantial basis hereabouts, and up to now they have the re-actionary element among us gaping and guessing, for they have demonstrated some totally unexpected yields in tonnage and sucrose—that seem to mean that our Louisiana sugar factories may be profitably employed during part of their idle season in producing beet sugar.

It is all a very serious and important matter and Mr. Petrikin evidently realizes that it is else he would not have come here all the way from Denver with his expert assistants, to give us the benefit of his specialized knowledge of the subject. He is much too busy a man to sacrifice so much time through idle curiosity. He is interested and intrigued in his capacity as a beet sugar industrialist of high rank; he is actuated by the unselfish wish to cast what light he can on what is, to us, an unknown road.

Mr. Petrikin is very kind to come and we divide our admiration impartially between his generous motive and his genial personality and welcome him most heartily on the score of both.

Our Florida Phoenix

It appears that there is Balm in Gilead; that is to say, we are informed, on competent authority, that the stubble of the League's frozen cane crop in Florida is in good shape and doing fine. "The shoots run 30 to 40 to the hill and some are two feet high."

The cane we have in Florida comprises approximately the following:

Variety	Linear feet of row (Rows 8 ft. apart)	Acreage
2714 P.O.J.	2400	—1/2
2725 P.O.J.	1600	1/3
36 M.	2400	—1/2
2727 P.O.J.	1600	1/3
213 P.O.J.	8000	—1 1/2
36 P.O.J.	8800	+1 1/2
234 P.O.J.	18380	4
U. S. 663	1680	1/3
U. S. 429	840	1/6
U. S. 576	840	1/6
	46540 ft.	9 1/3 acres

Arrangements are in the making for the cultivation of this cane by the Clewiston Co., which now owns the land on which it is being grown, and it is probable that the P.O.J. 234 will be turned over to the Clewiston Co. for the rental of the land and the cultivation of the crop, the balance of the cane to be shipped to Louisiana next fall. There is a disposition to take no more chances on the Florida climate by allowing it to stay there during the winter.

Bats

Mr. Eugene Pharr of Morgan City, La., writes us a letter about bats, and avers that they may help to solve the cane borer problem by eating the borers when they are in the moth stage. He cites the experience of a Mr. Coleman who found that in a certain bat-infested section of Mexico's cane-growing area there were no borers while a short distance away in a section where there were few bats, or none, the borers destroyed the cane crop. The helpful bats, in that case, lived in certain caves adjacent to the cane fields, and it is Mr. Pharr's belief that we should encourage bats to live in, or adjacent to, our Louisiana cane fields. It seems that Dr. Charles A. R. Campbell, a bat savant, has written a book entitled "Bats, Mosquitos and Dollars" in which he tells how bat colonies may be built up to act as a devouring scourge to pestiferous winged insects. The book in question is published by the Stratford Company, Boston, Mass., and costs $2.00. It describes how "bat bait" can be prepared and used to get the bats to to come and live in special habitations prepared for them, and from these habitations they will pour forth at eventide and slay, slay, slay.

There is nothing far fetched, nor improbable nor imaginary about all this. Bats do eat winged insects that fly at night and the cane borer moths come in that category. We have reached a point now where we must all put our "what's the use" attitude sternly aside and try everything that holds out any hope at all for diminishing the borer menace. Our suggestion is that all who have become interested by what we have said in this little article write Mr. Pharr, who has read the book, and get further particulars from him.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912

Of The Sugar Bulletin published semi-monthly at New Orleans, La., for April 1, 1926, State of Louisiana, County of Orleans.

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared Reginald Dykers, who, having been duly sworn according to law, deposes and says that he is the Editor of the Sugar Bulletin and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, The American Sugar Cane League of the U. S. A., Inc., New Orleans, La.; Editor, Reginald Dykers; Managing Editor, None; Business Manager, None.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must he given. If owned hy a firm, company, or other unincorporated concern, its name and address, as well as those of each individual memher, must he given.) American Sugar Cane League of the U. S. A., Inc., 407 Carondelet St., New Orleans, La., S. C. Munson, Napoleonville, La., Pres.; David Pipes, Jr., Houma, La., V. P.; W. H. Chaffe, New Orleans, Secty. No capital stock.

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REGINALD DYKERS,

Sworn to and suhscrebed before me this 1st day if April 1926.

(Seal) E. HASPEL,

(My commission expires with death.)

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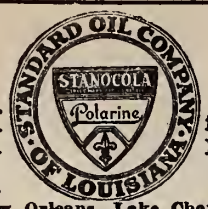

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THE SUGAR BULLETIN

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A Rapid Method For Propagating Seed Cane By Transplanted Sprouts

Elsewhere in this issue of the Sugar Bulletin we publish an article bearing the caption that heads this editorial and written by Dr. E. W. Brandes, Senior Pathologist in Charge Sugar Plant Investigations, Bureau of Plant Industry, Department of Agriculture, Washington, D. C., and it is republished by us from "Facts About Sugar" to which Journal Dr. Brandes sent the article. The cuts used as illustrations have been kindly loaned us by Mr. E. W. Mayo, the Editor of Facts About Sugar, and we now make grateful acknowledgment to him for his courtesy in so doing.

There are many problems confronting our Louisiana sugar industry, and opinions may differ as to their relative importance, but there is a growing conviction that the ranking problem is the one depicted by the cane tonnage figures. In other words there is a feeling growing every day that we ought to begin at the beginning and make a normal crop of cane, or better. Nobody has launched himself more wholeheartedly nor more helpfully into the solution of this problem for us, and nobody has been better equipped for the effort through scientific knowledge and official position, than Dr. E. W. Brandes, the author of the article on "A Rapid Method for Propagating Seed Cane by Transplanted Sprouts". In this article he explains how we may increase the amount of seed cane from our plantings here of new varieties by transplanting the suckers. This will not produce mill cane but it will produce a large increase in the amount of cane for seed, and as our present endeavor is to enlarge the area in the new varieties and not to grow them, as yet, for the mill, the information Dr. Brandes gives in his article is timely, immensely valuable, and in keeping with the whole system of intelligent aid which he has practiced in our behalf year after year since his interest in our Louisiana sugar industry was aroused several years ago.

There already confronts us a heavy obligation to Dr. Brandes and to the Bureau of our Government to which he is attached, for the assistance and co-operation and encouragement given us. It has all been offered with such manifest personal interest that it can not be regarded as merely a routine performance of official duty. The spirit of it has transcended the perfunctory operation of a Federal Bureau and the mechanical activity of a civil servant.

We believe there is no tangible form our thanks can take which Dr. Brandes will accept other than just one, and that is that we put into practice what he recommends. Our area in P.O.J. 234, P.O.J. 36 and P.O.J. 213 is all too small. Our salvation may depend on increasing that area more quickly than is possible under the ordinary planting system. Let us all read Dr. Brandes' article carefully and please him and help ourselves by carrying out the plan of transplanting the sprouts from the canes in the manner he has so carefully explained to us.

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A Rapid Method For Propagating Seed Cane By Transplanted Sprouts

By E. W. Brandes
Senior Pathologist in Charge, Office of Sugar Plant Investigations, Bureau of Plant Industry.

In view of the necessity that sometimes arises for increasing the available amount of seed cane at a rapid rate, it would appear to be important to outline to the sugar cane planters of Louisiana a method that insures extremely rapid multiplication in that State. At the present time it is felt that practically all plantations in Louisiana could profitably grow a large proportion of 234, 36, and 213 P.O.J. cane on account of resistance of these varieties to mosaic and root disease. The situation demands that, if advantage is to be taken of these varieties in the present emergency, a large acreage will be necessary by 1927 or 1928. In the interest of those who believe that these varieties offer a partial solution of the problem of decreased productivity on the Louisiana plantations, the following method of propagating by transplanted suckers is given:

As shown in Figure 1 the below-ground parts of a sugar cane stool consist of the roots and the branches of under-ground stems, or rhizomes. A single-eye cutting, or seed piece, can by means of this branching of the under-ground stem result in a large stool similar to the one illustrated. The first shoot arises

Fig. 1.
Showing attachment of sprout to underground stem.

from an eye on the seed piece and consists of a large number of nodes and internodes with a bud, or eye, situated at each node. These eyes germinate below the surface of the ground and form branches of the second order, which in turn produce in the same way branches of the third order. These underground branches, or shoots, arising from the original shoot are each potentially new individuals and can maintain a separate existence if detached from the mother stool, provided root growth has started in them. They must be separated from the mother stool with great care and must be given special care after transplanting if they are expected to survive.

Fig. 2.
Method of severing sprout from underground stem.

Figure 2 shows the operator separating a shoot of the third order from the mother stool. This, of course, is accomplished in the field while the mother stool is deeply imbedded in the ground, and requires that the earth be carefully removed from the base of the young shoot to the point of attachment. It should be severed by a long sharp knife in such a way that the young tender roots attached to the shoot are not injured.

Fig. 3.
As many roots as possible should be retained.

Figure 3 shows a shoot that has been detached, This shoot contains the minimum amount of roots that could be expected to permit the young plant to maintain an independent existence. The top leaves must be carefully removed several inches above the growing point by a sharp blow with the knife, as shown in Figure 4. This is for the purpose of reducing the leaf surface, thus cutting down the amount of transpiration or loss of water from the leaves, which, if excessive would cause wilting and death of the young plant on account of its inability to take up compensating moisture with its impaired root system. The shoots should be set out in holes and the earth filled in about them only to the depth to which they were formerly imbedded in the earth when attached to the mother stool. This depth, as pointed

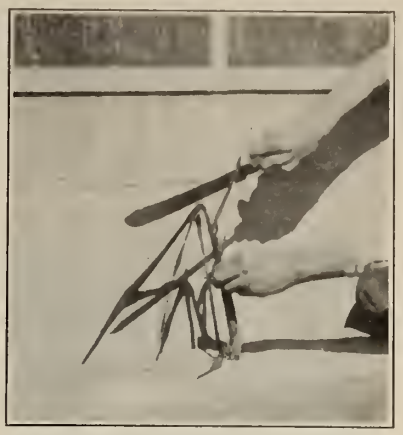

Fig. 4.
Topping the sprout to reduce leaf area.

out by the operator in Figure 5, is usually indicated by a paler color of the leafsheaths from the former ground level downward. After the shoot has been planted to the proper depth, the balance of the hole should be filled with water. It is of great importance

Fig. 5.
Planting in holes and covering to former depth.

that the young shoots be kept moist at all times after being removed from the mother stools until they are

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planted in their new situations. If they are left for any length of time in piles or in carts they should be covered with wet sacks, or coverings that will prevent the evaporation of water. The young plants should be irrigated each day if the weather is dry. Where there is no special provision for irrigation it is practicable to drive through the fields with a tank cart. After the roots have become established, which usually requires from ten days to two weeks, the plants are able to maintain themselves as well as young plants from ordinary seed.

Fig. 6.
Irrigating the sprouts after setting out. This is an indispensable step.

By this method it is possible to extend a field of cane planted in the ordinary way ten to twenty fold. The shoots may be taken from mother stools in Louisiana when the stools are three and a half to four months old. If set out before July 1, the young shoots will make a growth before the end of the season that will permit of the stalks being used for seed. Of course, this method can not be used for the increase of mill cane, but is restricted to the rapid increase of seed cane. If the ordinary seed cane is planted out in rows, say fifty feet apart, the intervening eight or nine rows could be filled in by this method at the end of three and a half or four months with a minimum of transportation of seed material. This would permit the use of land between the original rows for an early spring vegetable crop before transplanting of the cane sprouts. On account of the fact that nothing is chargeable for seed cane and the entire cost of planting is represented by labor alone, it is believed that the cost of planting by this method might be actually less than by the ordinary method. It would depend, of course, upon weather conditions and the amount of irrigation necessary.

Varieties of cane that tiller (sucker) freely offer much greater possibilities for rapid increase by this method than varieties that do not tiller freely. This method has been used by the writer with great success for the past two years in Florida, and it was found completely practicable on a plantation in Louisiana where it was tried following the writer's suggestions last year.

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Sugar Beets In Louisiana

Official text of an address by Mr. W. L. Petrikin, President of the Great Western Sugar Co., of Colorado, delivered at Baton Rouge, La., Apr. 15th, 1926.

I was surprised to learn last summer of your purpose to establish the beet sugar industry in Louisiana, and I want to say at the outset that its inception is already surrounded with one important factor for its ultimate success and that is, the enthusiasm of such men as Mr. Supple, Dr. Coates and Mr. Munson with whom I had so pleasant a visit in Colorado. So far as I know, commercial production of sugar beets has not been seriously attempted as near to the tropics, heretofore, although southern California temperatures are not much lower if we accept their printed word.

I am glad to have an opportunity to offer you a few pages from a quarter of a century of experience in this business in the hope that they may help you to meet some of the problems that are certain to confront you, with as little handicap as possible. Your problem is almost in its entirety an agricultural problem. The extraction and refining of the sugar from the roots is done by a process which has stood the test of time and varies only in unimportant details the world over. The percentage of recoverable sugar can be predicted within narrow limits and the cost other than agricultural costs are susceptible of accurate estimation. You who are familiar with your own conditions can make these estimates.

Your field tests which have been made experimentally indicate that your beets as harvested will contain about 12% of sugar or 240 pounds to the ton. In round figures you will extract from these beets about 175 pounds of granulated sugar from each ton of beets harvested. You will probably find it expedient after your initial experience to add an auxiliary process for recovering the sugar values from final molasses which because of its freedom from invert sugar permits of sugar recovery by a precipitation process (Steffen process). If you do so I think you will pack about 200 pounds of sugar from each ton of beets purchased. At the present market this is worth about $10.00 and from this sum you have to pay all expenses of factory production, all general and overhead expenses, pay for your beets and derive a profit. You are proceeding with this knowledge before you because you believe that the farm cost of beets is low in this territory and I believe it is true. I can assure you that beets of this quality containing only $10.00 worth of sugar to the ton could not be grown and manufactured in Colorado at a profit. I say this to emphasize how vitally important it is that you overlook nothing which would aid in low cost farm production of sugar beets.

The selection of a seed strain which is best suited to a warm humid climate and a soil rich with humus should be given attention. A vast number of strains are bred by the European seed producers and selection is made to suit the varying conditions in the provinces of the continent. From these strains, selection for American use is made by rule of thumb methods, but reputable experiment stations can determine by testing varieties, those which are most adaptable, or they can go further and carry on breeding operations to develop more useful strains. In general strains which give a high sugar concentration produce low tonnage, and strains with low sugar concentration give high tonnage, while the strain which yields the maximum amount of sugar per acre is most profitable to both grower and manufacturer.

Your excellent Sugar School can be of invaluable service in this field.

In Colorado our most important factors which limit per acre yields are:

Length of growing season.

Character of hand work in the fields.

Water supply.

Between Colorado and Louisiana conditions are widely different and yet I can see where all of our problems can be translated into Louisiana problems. When we can get a good germination of the seed, get our labor to leave the full number of plants in the row which the land is capable of supporting, and keep them growing continuously for 25 weeks, we know that a big crop will be harvested. It takes soil fertility to produce tonnage but the things we do to conserve a meager water supply inevitably result in making the plant food available.

We urge early planting for two reasons: first, to assure a long growing season, and secondly, because the residual winter moisture in the soil in early April is sufficient to assure a complete germination of the seed. In your humid climate, I take it that you can depend upon a thorough germination, if you plant say 18 pounds of seed to the acre with drills properly set. A good germination can be easily ruined by a poor job of hand work in bunching and thinning and in this operation, more potential tonnage is lost throughout the entire beet industry than through any other factor of production.

We have determined beyond any question of doubt that in our territories as plants are left closer and closer in the row there is a continuous increase in yield until the spacing is uniform at 12 inches between beets in the row with row 20 inches apart. In spite of the efforts of our agricultural organization, the average spacing in our territory is about 21 inches in the row and the loss in the tonnage resulting is more than 5 tons to the acre. We are now conducting an intensive campaign among laborers and growers to improve this condition with some evidence of success. The close relationship between grower and manufacturer, the meeting of emergencies that threaten the crop and the close supervision of beet fields which is necessary, compels the provision of an expert agricultural service which is incidentally invaluable in the dissemination of better farming information such as this.

You will determine by experience what row spacing gives you the best results. You will probably observe that the largest roots contain the lowest sugar concentration and that a further advantage may be found in closer spacing in the form of higher sugar values.

As you probably know, there are two operations performed simultaneously at the thinning season; the blocking out with the hoe and the hand thinning of the blocked bunch. Recently we have found that yields can be materially improved by selection of the strongest plant in each bunch. The extra vigor that

is evident in such plants of thinning age has been found to give them an advantage throughout their growth period. Supervision of the thinning operation to assure a proper "stand" of healthy vigorous plants is of such paramount importance that it might easily determine the difference between success and failure.

During the growth period, the care of the crop is always based upon doing the expedient thing at the right time. We cultivate frequently to destroy weeds, aerate the soil for making plant food available, and to continuously keep a surface mulch for conservation of moisture. We irrigate as frequently as water rights permit with the aim of keeping soils continuously moist, yet without water-logging. The end desired is to stimulate a continuous growth, avoiding dormant periods which rob the roots of available growing time. Your culture will no doubt be along different lines but directed toward the same end.

There are other emergencies than climatic to be met as they arise. The beet plant like all others has its diseases and there are insects and other pests that prey upon it. Among the diseases, the most damaging with which we have had experienced is commonly known as "Leaf Spot", coming at the ripening stage when conditions are favorable for its spread and blighting the foliage through which growth and sugar storage take place. It can not destroy a crop but the value of its damage may reach alarming proportions. A vigorous condition of growth resists its spread somewhat and maturity of the roots before infection limits the damage.

Among the insects the web worm is one of our worst enemies. The young worms hatching from eggs deposited on the beet leaves have a voracious appetite and it is amazing how quickly an entire field can be defoliated if no effort is made to check them. The defoliation of a field robs the roots of the growth period required for new leaf production and materially impairs the yield. In our territory we are equipped to meet any emergency caused by web worms in that we have equipment and supplies always at hand to spray all of our fields with Paris Green within a very few days' time. With such prompt action the cure is complete and no loss sustained. The "Leaf Hopper" has threatened the industry in California and Idaho but. from what we know of his preferences for the desert life, we would not expect him to visit you in Louisiana.

The sugar beet Nematode is the only parasite with which we have met that is capable of total destruction of the crop, and after 25 years only a negligible percentage of fields in Colorado are infested. Once the infection is found, there is no cure known but crop rotation that will hold it in check. In fact rotation is invaluable in checking the inroads of all of the enemies of the beet crop as well as desirable from the standpoint of yield.

We have long felt that the more rigorous climate of the northern part of the temperate zone and of the higher altitudes was an important factor in keeping our crop reasonably free from disease and it would seem to me prudent to organize now to be unusually alert in looking for evidence of invasion of the fields by known or unknown enemies, here where they can thrive with less effort than in the North. Your Sugar School can here again serve its state in a more effective way than any private enterprise.

Experience has taught us that one of the major losses of the industry occurs in the respiratory loss of sugar during the period between harvest and diffusion. We aim to operate our factories for about 100 days. The weather enforces a 60-day harvest and we must store 40% of our crop for a considerable period. Sugar disappears during this period, partly in sustaining the life of the root and partly in the form of decay. The quantity loss depends upon the time in storage, while the rate of loss depends in large measure on the temperature. In this warm atmosphere it would be best to arrange your harvest so as to have on hand only a minimum working supply of beets at any time. This is the practice in California where it results in only a small and unimportant loss. In northern climates this loss amounts to 5% to 10% of the total sugar grown.

I have touched on only a few of the problems of the industry, those however which, if not successfully met, might discredit this budding industry when it might otherwise have been saved. There is a right way and a wrong way to handle cultural problems and the farmer is not reputed to be disposed to give up the old for the new. You will never have so great an opportunity to secure the kind of farming you desire to see as now when every grower is starting new. He will adopt the right method with as much facility as the wrong and right or wrong the first method will be pursued for many, many years.

I am prone to envy the builder of a new industry. He can familiarize himself with the accumulated knowledge of his fellows in other territories, teaching what is best without the handicap of tradition, installing equipment of the latest modern type without the penalty of writing off old investments, and accepting the public enthusiasm without its jealousies. With such advantages and the peculiar need which here exists, you will find a way to surmount initial difficulties and re-establish the famed sugar industry of this great state, more firmly than before.

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THE
SUGAR BULLETIN

Entered as second class matter April 13, 1925, at the postoffice at New Orleans, La., under the Act of March 3, 1879.

We stand for the encouragement of Home Industries as against foreign competition.

Vol. 4 NEW ORLEANS, LA., MAY 15, 1926 No. 16

The Hall of Shame

It appears that some of our friends among the insurance companies have instructed their agents in the Louisiana sugar district to cancel existent fire insurance policies on sugar factories and write no new ones. This action, they say, is based on their belief that the production of sugar in Louisiana is about to become extinct, which would mean that the sugar factories would cease to be an asset to their owners, and, in fact, become a tax-eating liability.

Stripped of all pretty politeness and courteous camouflage, this means that they think the owners of the sugar factories may set fire to them. Let us call a spade a spade.

There cannot be much sentiment in business; in fact it is axiomatic that there isn't any at all. Likewise it is true that a brilliant cynic has defined gratitude as "a lively anticipation of favors about to be received" and perhaps he is right. So we shall not attempt to discuss the attitude of our insurance friends in any spirit of tenderness or with any inclination to tune their heartstrings up to music. We shall discuss it, so to speak, in the raw.

Their decision to decline sugar factory fire risks in Louisiana was conceived in ignorance, born in narrow-mindedness and suckled in suspicion. The Louisiana sugar industry is in no danger whatever of becoming extinct. Every student of the matter, and the insurance actuaries are supposedly students *per se* and par excellence, knows that Louisiana is merely going through the same experience with mosaic infected canes that Porto Rico had seven years ago and from which that island emerged much greater as a sugar producer than ever before through the introduction of new cane varieties. Every student of the matter knows that Louisiana is merely going through the same experience that Argentina went through from the same identical cause and with the same identical results. Every student of the matter knows that sugar countries, the world over, have gone through agricultural crises due to mosaic, sereh, leaf-hopper, nematode and kindred ills known to plant pathology and have emerged whole and vigorous and stronger than ever through the scientific aid that is available nowadays to diseased crops just as medical aid has been available since Hippocrates to diseased bodies. Every student of the matter knows that the U. S. Department of Agriculture, speaking through Dr. E. W. Brandes, Senior Pathologist of its Bureau of Sugar Plant Investigations, is on record in many published statements to the effect that there is nothing the matter with the Louisiana cane crop that cannot be cured by the introduction of new varieties of cane, and every student of the matter knows that the U. S. Department of Agriculture has supplied and is supplying these new canes to Louisiana in ever-increasing quantity and that it stands squarely behind the Louisiana sugar industry and intends to see it through.

An insurance company so ill informed that it

THE
SUGAR BULLETIN

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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

sacrifices its own revenue and distresses its customers because it does not know all this is not to be quarrelled with or pleaded with or compromised with. It is simply entitled to, and must be given, a niche in the Hall of Shame.

Consider the rat. It is a nimble, graceful, soft, furry, sleek, bright-eyed little animal. It belongs to the same family of placental mammals as the squirrel and the rabbit, beloved of children and whose skins we love to touch. Yet nobody wants a rat and the very name carries with it a wealth of deep disgust.

The reason is that ever since the Phoenicians sailed their little galleys on the Aegean sea a thousand years before Christ it has been known that rats are congenital quitters and always leave a ship they think is going to sink.

Nor is there any record in maritime history or nautical legend of any invitation being extended to them to come back on board in cases where, after all, the ship floated safely into port as the Louisiana sugar industry is going to do.

Beets in the Bank

Yes, already!

The Hibernia Bank and Trust Co., of New Orleans is displaying on an easel in its lobby two large sugar beets. Gold and silver clink around them, and greenbacks rustle. In the middle distance is heard the soft thud of promissory notes falling due. Altogether the environment is such as to make any agricultural product swell with pride and importance and wonder if it can all be real. Accompanying the beets on the easel is the following notice:

NEW WEALTH FOR LOUISIANA

Here are two sugar beets raised on a plantation in the neighborhood of Plaquemine, Louisiana, and sent to the Hibernia Bank by one of its friends.

These beets though not matured show a sucrose content of 9.7%. A year ago sugar beets raised on the same plantation showed a sucrose content of 9.6% and, as last year had a very dry season, this indicates that beets can be grown favorably under practically every weather condition.

A 9.7% sucrose content would yield about 200 pounds of sugar per ton. At maturity the sucrose content should be from 12% to 13% and the yield above 250 pounds per ton.

There never has been a factory test of sugar beets in Louisiana but a small plant has recently been installed at Louisiana State University, where it is expected that the many patches, of four or five acres, of beets being grown on various plantations for test purposes and aggregating a total of over 100 acres, will be manufactured into sugar during the latter part of this month.

The authorities of Louisiana State University and many planters are sanguine that beets can be grown on a profitable commercial basis, and a beet sugar industry of large proportions established in Louisiana.

What the bank has done is to show an obvious interest in at least one of the plans proposed for putting the Louisiana sugar industry on its feet, and that is no small thing, because the effect will be psychological. Perhaps the day may come when

sugar cane, pariah that it is, may be placed on an easel in a bank. As a matter of fact some of the new varieties ought to be in every bank in New Orleans and South Louisiana as soon as it is big enough to cut. The Louisiana sugar industry has been fed the husks of discouragement quite a good deal more than enough. Its determined, gritty, courageous effort to save itself and to save from loss the various interests tied up with it, of which the banks are not the least, ought to be talked about, advertised and exploited wherever and whenever possible.

What bank will be the first to decorate its lobby with P.O.J. 234?

Sirup Labels

The Louisiana State Board of Health advises the American Sugar Cane League that the practice of using misleading labels on sirup cans has been found to exist to a considerable extent in Louisiana, the practice being mostly carried on by small sirup producing establishments outside of the Louisiana sugar district proper but not being confined to such establishments by any means. A very active campaign has been instituted by the Louisiana State Board of Health for the suppression of this practice and they have requested the American Sugar Cane League to co-operate with them in running down any product which is found to be labeled in violation of the State law which is practically the same as the Federal law governing the labeling of sirup. The Louisiana State Board of Health has issued the following official notice to sirup manufacturers and packers in Louisiiana:

Sirup when packed for sale must be labeled. A proper label consists of the name of the product, the net volume of contents, and the name and place of manufacturer.

Where the product is not a pure cane sirup a declaration of the contents must be made, the ingredients being named in order of their proportion, but the proportion need not be stated.

When the sirup contains sulphur dioxide or sulphites, the label must bear a declaration to that effect.

The presence of any preservative or flavor must be declared on the label.

Sugar-cane sirup is sirup made by the evaporation of the juice of the sugar-cane or by the solution of sugar-cane concrete, and contains not more than thirty per cent (30%) of water and not more than two and five-tenths per cent (2.5%) of ash.

Sugar sirup is the product made by dissolving sugar to the consistence of a syrup, and contains not more than thirty-five per cent (35%) of water.

The use of the words—"Country"—"Louisiana"—"Open Kettle"—in the brand name can only be used on a Pure Cane Sirup, and the product must be made as the label indicates.

A sirup made of two or more ingredients cannot be named after any one ingredient.

A product made in imitation of a natural product must be labeled "imitation".

Sirup should be marked with the net volume instead of the net weight.

The co-operation of every sirup maker, including the man who makes but five or ten gallons per season, is solicited in our effort to have every can of Louisiana Sirup labeled when sold, and properly labeled so as to correctly inform the housewife what she is buying. A pure cane sirup is best advertised by a proper label. If you are proud of your product, do not hide it behind a false or misleading label.

This department is examining every brand of sirup sold in Louisiana and expects to place under seizure all products found misbranded and adulterated.

Bats

Dr. T. E. Holloway, of the Sugar Cane Insect Laboratory, U. S. Dept. of Agriculture, 8203 Oak St., New Orleans, writes us as follows:

New Orleans, Apr. 24th, 1926.

American Sugar Cane League,
407 Carondelet St.,
New Orleans.

I have been interested in the recent published statements about the possible value of bats on sugar plantations. I am not an authority on this subject, but seeing the announcement of a recent Bulletin from the Department of Agriculture on bats I obtained a copy of the Bulletin. I now send it to you.

From this Bulletin it appears that experiments in attracting bats are not only very expensive but very uncertain.

Very truly yours,

T. E. Holloway.

The Bulletin enclosed by Dr. Holloway is Department Bulletin No. 1395, and is written by Dr. Edw. W. Nelson, Chief of the Bureau of Biological Survey of the U. S. Dept. of Agriculture. It handles the bat question chiefly from the standpoint of the profit to be obtained from bat guano, which is shown, it says, to have a fertilizer value of $30.00 to $40.00 per ton. The uncertainty of colonizing the bats in sufficient numbers to produce enough guano to repay the expense of building their habitations is pointed out and the gist of the Bulletin is that such plans are likely to prove unprofitable. However the Louisiana sugar planters, while incidentally interested in the guano are chiefly interested in the bats as possible destroyers of the cane borer moth. Perhaps enough bats might be colonized to reduce the number of cane borers materially, and even if the number of bats was insufficient to make enough guano to pay for the construction of the "bat house" the house might nevertheless pay handsome dividends in the shape of borer-free cane.

Some expression from Dr. Nelson on the subject would be interesting, and we hope Mr. Holloway can obtain it for the next issue of the Sugar Bulletin.

Torulae

The Louisiana Sugar Experiment Station, operating in this instance through the scientific skill and research ability of Dr. W. L. Owen of the Station staff, has patented a process for the preservation of sugar against deterioration in storage. This process is free to the people of the United States and may prove to be an epochal achievement.

In brief, the process comprehends the culture in a molasses wort of a race of yeast called torulae, and the molasses thus inoculated is sprayed on the sugar in the centrifugals, the crystals being thereby filmed with the torulae yeast which forms carbon dioxide but does not attack sucrose. The carbon dioxide in the film holds in check the mold fungi which are the cause of the loss of polarization suffered by sugar in storage. Exhaustive experimentation by Dr. Owen seems to fully confirm the value of his discovery. The principal item of equipment is a yeast machine of a type adapted to the production of torulae yeast, with some subsidiary tanks and piping. Dr. Owen of the Louisiana Experiment Station, Baton Rouge, La., will doubtless be glad to give particulars.

Notice

The American Sugar Cane League desires to notify all cane growers who have paid their dues to the League through the factory that bought their cane that a receipt for the exact amount of the dues, a membership card and a League button are always sent by the League to each member as soon as the dues reach this office. Several cane growers have written us that although they paid one cent a ton through the factory that bought their cane they have not yet received an acknowledgment from us.

The League now asks every cane grower who made such payments and who has not received his receipt, membership card and button to inquire of the factory through which he paid at what date they turned the money over to the League.

Cuba's Wrecking Policy

The sugar world in general trembles with alarm over the sugar price situation and there is a universal tendency to point an accusing finger at Cuba and lock the door against her, lest her wrecking policy reduce the beet and cane farmers of all countries to the industrial level of hers.

The United States Bureau of Foreign Crops and Markets, Washington, reports that increased tariffs on imported sugars have gone into effect during the past year in Belgium, Italy, Bulgaria, Jugoslavia, Finland, Poland, Rumania and Switzerland while Germany has substituted a definite tariff for the complicated system of import and export license formerly in effect. Increased agitation for protection is said to be still prevailing in the high cost producing countries of Europe and still higher duties may be expected in some countries. An increase in the Austrian import duty has been decided upon, according to a report to the Department of Commerce from Acting

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We are also prepared to supply Acid Phosphate, Superphosphate, Sulphate of Ammonia, Nitrate of Soda, Cyanamid and Potash Salts to those planters who prefer to make their own mixtures, and to those who are planting cotton or rice, as well as cane, we offer our high-grade mixed fertilizers, especialy made for tholse crops.

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Commercial Attache Baldwin at Vienna. Sugar beet growers in Germany are seeking higher tariff barriers, with growers and manufacturers finding it very difficult to meet financial obligations due to the low cost of sugar and the increasing costs of production. In Italy sugar factories are also urging an increase in duties.

The same report states that last year consumption in 10 European countries, the United States and Cuba apparently kept pace with the increase in known world supply as indicated by world production plus stocks in eight countries. Consumption in these countries increased 14.5 per cent over the previous year while the known supply increased 14.7 per cent.

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Root Disease Of Sugar Cane

The United States Department of Agriculture has just issued Department Circular 366 entitled Root Disease of Sugar Cane in Louisiana, the author of which is Dr. R. D. Rands, Pathologist, Office of Sugar Plant Investigations, Bureau of Plant Industry.

As is well known, Dr. Rands has been stationed for much of the time during the past two years at the Federal Experiment Station near Houma, La., and he has made an intensive study of the root diseases affecting sugar cane in this State. Circular No. 366 is a compilation of his studies and investigations and it has high value and should be read carefully from beginning to end by every cane grower in Louisiana.

As a result of his work Dr. Rands concludes that root disease is largely responsible, at least on the heavier soils, for the seriously reduced yields of cane in Louisiana. He confirms an earlier conclusion expressed by him about a year ago that the mutilation of roots by soil inhabiting animals is largely responsible for the root troubles of our cane but he says that the complexity of the problem is such that further study and experimental work are necessary. Dr. Rands seems to have one very clear opinion, however, and that is that the trouble may be largely controlled, at least on the lighter soils, by substituting more vigorous disease evading or disease tolerant cane and he says that for this purpose several of the P.O.J. seedlings may be recommended. He advocates the improvement of the physical conditions of the heavier soils. Dr. Rands says:

> "D-74 and the so-called native canes have been satisfactory in the past and still give fair yields; but this is true only under the most nearly ideal weather conditions for cane growth. Because of their susceptibility to disease and their comparatively weak root systems with low recuperative and foraging ability, they are apparently no longer able to withstand the changed conditions of soil and the variations of climate to which they are of necessity exposed.
>
> "The Java seedling, P.O.J. 234, distributed by the United States Department of Agriculture and the American Sugar Cane League in the fall of 1924, although sometimes severely attacked by the root-eating animals generally puts forth new roots fast enough to withstand its injuries, largely because of its great natural vigor (inherited from its slender, more grasslike ancestor Chunnee). It is by no means an ideal cane, but its earliness, heavy stooling, and ratooning qualities appear to be sufficiently superior to the common varieties, even on the heavier soils, to commend it to the earnest attention of every sugar-cane grower."

Copies of Circular 366 will be supplied by the Washington Office of the American Sugar Cane League, 810 Union Trust Bldg., to all who apply.

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P. O. J. CANE FOR SALE

The American Sugar Cane League offers for delivery on or about Nov. 1st, 1926, the following amounts of P. O. J. 234 cane:

IN ASSUMPTION PARISH
8 tons, more or less, at the plantation of Godchaux Sugars, Inc.
8 tons, more or less, at the plantation of R. C. Martin Sons, Inc.
8 tons, more or less, at the plantation of R. L. Baker.

IN ASCENSION PARISH
8 tons, more or less, at the plantation of Picard & Geismar.
8 tons, more or less, at the plantation of Percy Lemann.

IN AVOYELLES PARISH
6 tons, more or less, at the plantation of Dr. W. D. Haas.
8 tons, more or less, at the plantation of Penick Molasses Co.

IN EAST BATON ROUGE PARISH
8 tons, more or less, at the plantation of H. L. Staring.

IN WEST BATON ROUGE PARISH
8 tons, more or less, at the plantation of Cinclare Central Factory.
8 tons, more or less, at the plantation of H. Wilkinson, Jr.
8 tons, more or less, at the plantation of Milliken & Farwell.

IN IBERVILLE PARISH
8 tons, more or less, at the plantation of G. M. Murrell Pltg.Co.
8 tons, more or less, at the plantation of A. H. Gay Sugar Co.

IN JEFFERSON PARISH
8 tons, more or less, at the plantation of Willswood.

IN LAFAYETTE PARISH
10 tons, more or less, at the plantation of Pierre Landry.

IN LAFOURCHE PARISH
8 tons, more or less, at the plantation of Godchaux Sugars, Inc.

IN POINTE COUPEE PARISH
4 tons, more or less, at the plantation of Lacour Plantation Co.

IN RAPIDES PARISH
6 tons, more or less, at the plantation of Meeker Sugar Refining Co.
8 tons, more or less, at the plantation of Shirley Co., Inc.

IN ST. CHARLES PARISH
8 tons, more or less, at the plantation of Ellington Sugars, Inc.
8 tons, more or less, at the plantation of Godchaux Sugars, Inc.

IN ST. JAMES PARISH
8 tons, more or less, at the plantation of Webre Steib Co.
8 tons, more or less, at the plantation of L. Keller & Co.

IN ST. JOHN PARISH
8 tons, more or less, at the plantation of T. Lanaux's Sons.
8 tons, more or less, at the plantation of Godchaux Sugars, Inc.
8 tons, more or less, at the plantation of San Francisco Pltg. Co.

IN ST. LANDRY PARISH
6 tons, more or less, at the plantation of Dr. W. D. Haas.

IN ST. MARTIN PARISH
8 tons, more or less, at the plantation of Levert St. John.
8 tons, more or less, at the plantation of Smedes Bros., Inc.

IN ST. MARY PARISH
8 tons, more or less, at the plantation of Shadyside Co.
8 tons, more or less, at the plantation of Columbia Sugar Co.
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THE
SUGAR BULLETIN

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With Apologies To The Worm

It seems that the "United States Sugar Association" issues a "Review", and the first and only copy we have ever seen now—lies—before us. The "Review" consists of just two pages, a front page and a back page, but it manages in that small compass to wreck all the ethics of reputable journalism, and it does so in this wise:

We printed in the May 15th issue of the Sugar Bulletin an article entitled: "The Hall of Shame", in which we stated that some insurance companies were refusing to insure Louisiana sugar factories, under the belief that the Louisiana sugar industry was about to become extinct. We then went on to point out the fallacy of this idea, inasmuch as there is nothing the matter with the Louisiana sugar industry except a disease of the sugar cane which is being eradicated by the substitution of new varieties supplied through the United States Department of Agriculture. The "Review" is guilty of printing the first two paragraphs of the article, containing the opinion of the insurance companies that the Louisiana sugar industry is about to become extinct, and then stopping, as if that was all of the article, and it credits it to the Sugar Bulletin, making it appear that the Bulletin's article consisted of just those two paragraphs. A newspaper man who would do that would print the ten commandments with the word "not" omitted all the way through.

The episode leads to a train of thought concerning the United States Sugar Association and its idiosyncracies and characteristics. It is a rare example among corporate bodies, inasmuch as it is ashamed of its identity, afraid of its own purposes and a refugee from the scene of its operations. With full knowledge of the fact that it is an organization of interests that are centered in Cuba, it dares not confess it but takes the name "United States". It is so frightened at the rapacity of its own members that it has had to have the protection of recent special Cuban legislation to keep them from choking themselves with their own greed. It keeps religiously away from Cuba where all its investments are and where its tentacles ramify into the little homes and fields of the Cuban farmers, and houses itself at 83 Beaver street, one of lower New York's crooked alleys.

Every now and then we come across a strange organism such as this. They are, perhaps, Nature's nightmares. We call to mind, for instance, a peculiar little worm-like creature that feeds on rose-bushes and which is an exact replica of a clot of offal. It seeks to thus disguise its true purpose, which is to ruin and destroy the roses, and escape the vengeance of those loyal friends of the horticulturists, the birds. And if Nature permits a worm to look like a clot of offal in order to enable it to destroy roses, perhaps the brilliant originators of the United States Sugar Association reasoned that it is permissible to turn the thing around, permissible for a clot of moral offal, a kernel of hate, selfishness, untruthfulness and anti-patriotism, to mask itself as a *"United States"* Sugar Association, *in order to destroy the United States' sugar industry.* The unfairness shown in the mutilation of the article that appeared in the Sugar Bulletin is merely a typical emanation from this unsavory clot.

THE
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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Beet Sugar At Baton Rouge

The Sugar Bulletin is authorized by Dr. W. R. Dodson to announce that he expects to have everything in complete readiness for a public exhibition of beet sugar production at the Experiment Station sugar factory on the 15th, 16th and 17th of June. Preliminary runs to test out the machinery will occur earlier than that, but as there will doubtless be various little difficulties to straighten out at the start, as is the case in all initial trials of this nature, he has decided to defer the invitation to the public to the dates above mentioned, by which time he feels sure everything will be working according to Hoyle.

Root Disease Of Sugar Cane In Louisiana

By R. D. Rands,
Pathologist, Office of Sugar-Plant Investigations, Bureau of Plant Industry.

The frequency of crop failure and the general reduction of yields of sugar cane in Louisiana have stimulated widespread interest and study of the possible factors involved. From the divergence of opinion expressed in scientific publications and trade journals it is evident that no single condition can be held responsible, but that the frequently diminished and highly fluctuating yields are probably due to a combination of interacting causes the individual importance of which is difficult to estimate. Of these, the reduction in yield from mosaic, "root disease", red rot, and moth borer have been particularly stressed.

Root disease in Louisiana, as in most sugar-cane regions, is now a major problem because of its prevalence in soils long utilized for cane culture. For many years pathologists have recognized that the unthrifty appearance of many of the fields in Louisiana was definitely correlated with deficient root systems. In a discussion of the Louisiana situation as long ago as 1919, Brandes stated that "mosaic does not by any means present the practical difficulties in the way of control measures to be met with in root rot. Root rot, in fact, is to be regarded as a far more serious problem for the Louisiana cane planter than mosaic on this account." The lack of vigor and extreme yellowing noticeable last spring in hundreds of fields covering the southeastern section of the sugar belt were traceable in a large measure to root suppression, as was learned by careful examination of many cases.

So-called root disease, or root rot, has been rather extensively studied in several countries for a number of years; but unfortunately nowhere has much light been shed on either its cause or control, other than by substitution of more vigorous and sometimes necessarily lower sugar-yielding varieties. Louisiana is years behind in adopting this control measure, which, aside from crop diversification and soil improvement, is thus far the only one that can be definitely recommended. However, from intensive studies to determine the cause or causes of this complex and obscure trouble now being undertaken by both the Louisiana Agricultural Experiment Station and the United States Department of Agriculture, it is hoped that a more direct and satisfactory method of control may be developed. Progress in this direction has already been made, (1) by the discovery of extensive root damage caused by snails predisposing the roots to decay, which was reported by the writer last year, and (2) by the finding of hitherto unsuspected root-rotting fungi, more recently announced by the State pathologists. Although there are possibly several ill-defined root diseases affecting sugar cane in Louisiana, the most prevalent type, according to the writer's observations, is that in which the stunting, dis-

tortion, and rotting of the roots are instigated by soil-inhabiting snails and other animals.

The purpose of this circular is to outline the symptoms, effects, and predisposing conditions for this root disease (this term being tentatively used by the writer to include both animal damage and subsequent root rot), although further study may show that some of the varied manifestations of advanced cases here described are attributable to other causes. The discovery in the United States of two species of root-eating centipedes involved in the trouble is reported.

Symptoms and Effects of Root Disease

Root disease of sugar cane belongs to that class of troubles popularly attributed to the weather, lack of soil fertility, faulty cultivation, or some assumed or imaginary cause. This is natural and not without some foundation in fact, because practically all diseases, both plant and animal, are profoundly influenced by changes in environment, or in the individual itself. It is essential, however, to distinguish between the direct effects of these conditions on the plant and their indirect influence on the development of disease. Thus weather fluctuations, which would not have a permanently deleterious effect on a healthy individual, might result in the actual death of a diseased one. This is particularly true with those diseases which curtail or prevent normal root growth.

Since the effect of root disease on plant cane was well illustrated in so many fields during the drought in the spring of 1925, that condition may be taken as an example in explaining the complex situation which usually exists. It will be discussed in detail, because the yellowing and dying of plants at that time, particularly in the lower coast sections, seem to have been typical of what has occurred in lesser degree many times in the past in Louisiana and doubtless contributed greatly toward reducing yields.

Effect on Plant Cane

In the Terrebonne and adjacent districts of Louisiana, where the development of the crop was carefully followed by the writer, the spring of 1925 opened with a rather prolonged dry spell. As there was plenty of moisture in the soil from the winter rains, a dry March was welcomed by the planters, who were thus enabled to get through the initial tillage operations in good time. The continued absence of rain during April unquestionably interfered with the germination and growth of such spring-planted crops as maize, potatoes, and soybeans. However, the fall-planted cane where, on account of the better settled condition of the seed bed and the loose-surface mulch, one would expect the least moisture deficiency, actually showed except on the lightest soils the worst apparent effect of the drought. Entire fields of the mixed and heavy soils turned yellow and burned, and hundreds of thousands of plants died outright. The importance of such an unfavorable turn in the crop, even to the succeeding stubble generation, is too generally realized to need elaboration here, but the factors responsible for it seem to be not so generally appreciated. Most planters naturally attributed the condition entirely to the drought, which was correct so far as the final outcome was concerned; but the fact was that long before there was any indication of drought, the roots of many of the plants were becoming so mutilated or destroyed by root disease that even under average climatic conditions only severe retardation and reduced yield could have been expected. The latter, in fact, occurred in several other parts of the sugar belt where, owing to a more equable spring, very few plants died, but, nevertheless, the deficient root systems failed to sustain growth sufficiently during subsequent dry spells to give satisfactory yields.

In order to evaluate the approximate part played by root disease in the development of the unfortunate condition of the plant cane crop in the lower coast sections, it is necessary to go back and trace the events which preceded the spring drought. The seed bed in 1924 was often rather poorly prepared, owing to the dry summer. The soil was not always thoroughly pulverized, but sufficient moisture was usually present for the germination of even the earliest planted cane. From the standpoint of growth alone, the conditions were not particularly unfavorable. The seed roots came out promptly in October and November but suffered severe injury from root-eating parasites, whose multiplication and access to the roots had been favored by the mild weather and the porous cloddy condition of the soil. Periodic examination showed that extensive root and seed rotting continued throughout the winter.

The health of the temporary or seed roots is important not only in promoting vigorous growth of the sprouts but also probably in the preservation of the seed itself during the dormant season. Often entire whorls of these emerging seed roots were found to have been eaten back flush with the surface of the stalk by the minute soil animals. The general prevalence and severity of seed-root mutilation doubtless facilitated infection of the seed by the red-rot and other fungi, which did great damage in spite of the relative scarcity of borers. Although other factors were doubtless involved in the seed decay, the writer's observations during November and December, 1924, indicate that seed-root mutilation must have had an important influence.

In spite of the extensive seed decay and loss of seed roots on the mixed and heavy soils, so much seed is ordinarily planted that a fair stand was obtained even in the spring of 1925. Counts in several fields on April 13 showed an average of one plant every 21 inches. This indicates that about 15 per cent of the sound eyes planted in the fall had germinated and survived. Considering the situation underground, even that high a percentage was surprising. Compared with previous years, however, the conditions on such soils in Louisiana were, after all, but little worse than usual, since C. W. Edgerton has shown by extensive germination experiments that, as a rule, only about 20 per cent of the sound eyes planted in the fall ever develop plants.

In spite of the striping and mottling from 100 per cent primary mosaic infection, the young plants grew well, and the superficial appearance of the crop in March, 1925, was described by the planters as excellent. However, this did not continue long.

Mosaic symptoms became more pronounced, of course, as the plants grew taller, but it soon became

evident that something else was radically wrong. Careful and repeated examinations showed that the few remaining healthy seed roots were not supplying sufficient moisture and that the rapidly growing young plants were being forced to put out more and more roots of their own. These likewise were being severely attacked by the root-eating and root-rotting organisms. Often all but 1 or 2 of the first 8 to 15 roots were killed at the tips or in their entirety before reaching a length of 3 inches. Many which were injured only at the growing tip began to branch farther back, so that in spite of this bunchy, short root systems the young plants up to nearly the 1st of April obtained sufficient moisture and food materials to continue growth. Had rain come at regular intervals and kept the surface soil moist, many of the plants would doubtless have continued to grow and would have accumulated enough vigor to at least partially evade their adversaries and become better established in the deeper layers of soil. But the dry weather continued, the soil about these short roots began to dry out, and in their already injured and weakened condition only a feeble effort was made to follow the available moisture downward. Decay of the seed stalks hastened by warmer weather cut off further assistance to the young plants from this source. Practically every plant on the mixed and heavy soils, particularly where the poorly pulverized condition prevented much capillary movement of water from below, gradually yellowed. Many of the leaves dried and burned at the tips and margins, and, as already stated, the stand was greatly reduced. The surviving plants, although keeping alive, made no growth whatever for more than a month. Even after heavy rains set in their recovery was slow and feeble, and not a few more succumbed during a further dry spell in May. Although nearly ideal weather prevailed during the remainder of the season, thin stands of late, uneven, and poorly stooled cane were the unfortunate outcome.

From the above history and analysis of conditions in the lower coast sections in the spring of 1925, it is obvious that a number of interacting factors were operating to reduce the crop prospect. The more important of these were evidently (1) drought (2) unfavorable physical condition of the soil, (3) root disease, (4) mosaic, and (5) seed decay. In the absence of quantitative data, only an approximation of the relative importance of the root-disease factor can be made. From the extensive observational evidence it seems reasonable to presume that had the roots been allowed to develop normally the effect of the drought and probably also to some extent the effect of the remaining factors would have been greatly minimized.

The probable correctness of this conclusion was shown by many of the fields just referred to. Even in the most severely burned areas there often occurred green, robust, vigorously growing individuals scattered through the field or in patches, with the yellowed or dying plants often as close as 2 or 3 inches on either side. If drought had been solely responsible for the yellowing, rolling, and firing of the leaves, as many planters claimed, how did these green plants escape its effect? Comparisons of the

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roots told the story. The green plants, through accident, had less injury from the root parasites or greater support from the seed, or in some unknown way had succeeded in sending their roots down into the moisture-containing layers below the mother seed stalk. The yellowed and dying plants, on the other hand, had failed. Examination of hundreds of such cases showed that the extent of yellowing and firing of the leaves was roughly proportional to the length of the roots.

Another indication that drought was not entirely responsible was the noticeably moist condition of the layers of the soil almost directly beneath the seed stalks. Actual measurements prior to the first rain, on Many 9, in one of the worst burned fields in Terrebonne Parish, showed an available moisture content of 8 to 16 per cent, based on the air-dry weight of the soil taken from the first 6 inches below the seed. There was therefore sufficient moisture to support a fairly heavy growth of cane had the roots been able to reach it.

Still another proof was the general behavior of more vigorous varieties of cane growing under identical soil conditions, as just described. Comparing only those varieties which were in the same stage of growth as the D-74 and the native canes, it was observed that Cayana-10, several of the United States seedlings, and two or three of the P.O.J. varieties, especially Nos. 228 and 2714, showed no marked yellowing or burning at any time during the spring drought. Their roots, however, were severely injured, though they succeeded in making more longitudinal growth and apparently suffered less rotting. The seed also remained sound for a longer period than that of D-74 or the native canes. These advantages, combined with their naturally more vigorous root growth, enabled these varieties to get at least a few roots well established in deeper soil before the surface layers dried out. Although they showed no drought symptoms, the top growth was slow and suckering was retarded for nearly a month, compared with similar plantings on light soil.

Effect on Stubble Cane

Root disease is usually more serious on stubble than on plant cane, because the conditions permit the undisturbed increase of the root-eating and root-rotting organisms. Its cumulative effect (of late accentuated by mosaic and other factors) reduces the number of profitable ratoon crops which might otherwise be obtained from an original planting. It has been many years since more than one or two successive stubble crops were produced in Louisiana on even the lightest soils. Cane cultivation is no longer attempted on large areas of the heavy soils. Thousands of acres of first-year stubble fields on such soils were plowed up or interplanted with other crops in the spring of 1924.

(To be continued)

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Baton Rouge, La.

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OUTLINE OF PLAN FOR CANE BORER CONTROL MEETINGS

During the past week the Entomologists of the Louisiana Experiment Station, Drs. W. E. Hinds and Herbert Spencer, have been studying the status of the cane borer in South Louisiana. They have found that the first generation adults began emerging during the first week of June and that the peak of this emergence will occur about the 15th to 25th of this month. The second generation is now beginning and will come to maturity during the latter part of July.

At this time a very heavy infestation is to be found in early planted corn, either in home gardens or in field plantings. In some fields examined an average of about 8,000 borer moths per acre were about to emerge. **What can be done to check this early infestation?** The American Sugar Cane League, cooperating with the Louisiana Extension Service proposes to hold a series of meetings during the last of June and first of July, at which cane growers from each Parish may conveniently gather at some central place and spend an hour or two in the fields studying how to recognize the borer infestation, in corn especially, and how to so handle the early infested corn as to prevent the emergence of the moths of either first or second generation and the subsequent infestation of, and heavy damage to, the cane crop. This may be possible without using insecticides or sacrificing nearly all of the corn crop.

Further details about these meetings will be sent out as soon as they can be arranged. Don't miss attending one of these meetings.

THE
SUGAR BULLETIN

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Root Disease Of Sugar Cane In Louisiana

By R. D. Rands,
Pathologist, Office of Sugar-Plant Investigations, Bureau of Plant Industry.

(Continued from Last Issue)

Unfortunately, there are no statistics extending over a period of years which show the separate yields of plant and stubble cane, nor are there any figures classified according to type of soil. That there has probably been a more or less gradual reduction in stubble yields, at least on the less favorable soils, is the opinion of many experienced planters. However, this reduction is evidently not of such magnitude or consistency as to affect greatly the combined yields per acre of both plant and stubble cane given for the State as a whole in Federal crop reports during the last 14 years. On the other hand, these final averages do not include the yields of the relatively large acreage of stubble cane ordinarily used for seed nor that for the sometimes large number of poor stubble fields plowed up or abandoned in the spring.

The Federal statistics from year to year on the area cut for sugar reveal large fluctuations in the tonnage of cane per acre since 1911, when acreage yields were first reported. Such wide variations alone suggest the influence of disease, the usual effect of which is to accentuate the normal variations due to climate or other factors. The noticeably wider variations in the figures since 1919, when mosaic was becoming general, have been attributed by some entirely to this disease. The results of a mathematical analysis of the question may be of interest. The variability in tonnage yields per acre for the periods from 1911 to 1918 and 1919 to 1924, inclusive, is of the order or 18.7 ± 3.26 per cent and 27.7 ± 5.82 per cent, respectively. The difference, 9.1 ± 6.68 per cent, representing the increase in variability since 1919, is obviously only about 1.4 times its probable error. With respect to possible differences in yields between the two periods, it is found that the mean for 1911 to 1918 is 15.57 ± 0.74 tons, and for 1919 to 1924, 12.81 ± 1.07 tons per acre, a difference of 2.76 ± 1.31 tons in favor of the earlier years. However, the difference is only twice its probable error. Though the data make it probable that a new yield-decreasing factor has been operating since 1919, the probability of this is not large enough to approach certainty. The statistics are suggestive rather than conclusive. However, as already stated, they pertain only to the area cut for sugar and do not include the abandoned fields or many other almost equally poor ones harvested for seed.

All indications point to root disease as a factor of long-standing importance in Louisiana. The recent epidemic of mosaic, although apparently not greatly influencing available statistics, has undoubtedly intensified an already serious condition. Naturally, the combined and probably interacting effect of mosaic, root disease, and red rot is more injurious than that of the latter two only.

Symptoms on Stubble Cane

In the beginning stages of the stubble crop the symptoms of the root disease are similar to the conditions already described for plant cane. Later a number of characteristic aboveground symptoms develop, which also apply to severe midseasonal cases in plant cane. These are (1) a slowing down of growth, (2) absence of or lateness of suckering, (3) rolling up of leaves at midday during periods of drought, (4) yellowing of the leaves (accentuated in plants also affected with mosaic), (5) premature dying of the lower leaves, and (6) rarely in severe cases a form of top-rot resulting from the death of the terminal bud. Most of these symptoms are suggestive of drought and might easily be thought to be caused by lack of sufficient water. The stubble plants growing on mixed land near Houma, La., illustrate this symptom, as well as many of the others

listed. This field was typical of thousands of acres of first stubbles last year. Although a heavy rain had fallen but a few days previously, the leaves at midday showed much curling from lack of water.

When a diseased plant is carefully dug up and the soil removed, the roots will be found to be poorly developed, abnormally short and fibrous, and a large proportion of them black and dead. The root-stock may show decayed areas and sometimes in advanced cases envelopment of white mold (*Marasmius* sp. or *Sclerotium* sp.). Death of the older roots will have forced the plant to throw out new roots nearer the surface. In periods of even slight drought, such roots have difficulty in obtaining enough water to supply the plant and at best are scarcely ever able to support more than the mother stalk and a few weak suckers.

The type of root disease described in this circular, which operates most seriously during the early stages of the crop, is apparently a direct or indirect result of mutilation of the roots caused by at least three soil-inhabiting animals. One, and probably the most important of these, is a small, flat snail, *Zonitoides arboreus* Say, which is native in the United States and certain of the West Indies. The other two are centipedes. One is a long, threadlike, yellow species, identified as *Arenophilus bipuncticeps* Wood by R. V. Chamberlain, of the Museum of Comparative Zoology, Cambridge, Mass., who states (in correspondence) that it is a native form, common particularly in the Southeastern States. The other is a minute white 24-legged creature belonging to the order Symphyla. H. E. Ewing, specialist on this group at the United States National Museum, has identified it as *Hanseniella unquiculata* (hansen) Bagnall, a species described from Venezuela and apparently not previously known to occur in the United States. It is the second symphilid to be incriminated as a crop pest, the other being the common *Scutigerella immaculata,* recently reported to cause serious damage to truck crops in California and Oregon. Although other representatives of this order of animals have been collected in various sugar cane countries, as Argentina, Java, India, Mauritius, none to the writer's knowledge has been reported attacking plants. In fact until recently little attention has been paid to their food habits.

The two other animals were also apparently not previously known to feed on living plants. That all three destroy cane roots has been repeatedly confirmed both by direct field observations and by feeding tests under confinement in the laboratory. They occur very abundantly in all of the cane soils, particularly in the so-called mixed and heavier types. They carry on practically their entire life in the crevices, earthworm holes, and the myriad other passages in the ground. When a cane root crosses or follows one of these innumerable crevices or channels, which it is often forced to do because of poor pulverization in the case of plant cane or the compacted condition in the stubble row, the animals attack it. They feed on the roots during practically twelve months of the year, from the moment the seed stalks take root in the fall until the last stubble crop is harvested. Rarely does a plant escape some injury. In some fields it has been impossible to find a root which was not more or less pitted or misformed. The extent and consequences of the injury, however, depend upon a number of interacting influences, such as soundness and vigor of seed, the fertility, moisture content, and physical condition of the soil, and the presence of root-rotting microorganisms, the relative importance of which is yet to be determined.

The damage is, of course, most serious in the spring, when the young plants are putting out their first shoots and becoming established and independent of the mother seed stalks or of the old stubble rhizome. During this crucial period many plants are either killed outright or so retarded in growth that suckering is much delayed.

The chief effect of the root injury, as already indicated, is to hinder elongation of the roots by killing or weakening the soft white growing tips. If the roots have already attained some length before the tips are killed, laterals will develop and take their place. If the tips of these are also killed, they in turn branch; and so the plant goes on trying, as it were, to become established. This delay in the lengthening and expanding of the root system not only retards the growth of the plant through restriction of the absorbing area (important because of the short growing season), but, more especially, its very life is endangered through the possible occurrence of dry weather.

The appearance of the roots attacked by the snails was described by the writer in the Journal of Agricultural Research for November, 1924. The damage caused by the centipedes is very similar and has not been positively differentiated in many cases. Both types of animals produce a pitting of the root cortex, which may vary considerably in appearance, depending upon the area and portion of the root exposed. Often the entire root tip is honeycombed by large ragged-edged cavities or is wholly eaten away. On the older portions the pits or cavities are much smaller, circular, or lenticular in form, one-thirtysecond to one-sixteenth inch in diameter, and extend inward only to the central root core. Often the white uninjured tissues surrounding the pits become discolored; as shown later, much of the root-rot plainly begins at such wounds.

The predisposing effect for root rot and other disturbances in growth resulting from mutilation of the roots by animal life in the soil has been observed by investigators in several other countries. Tschirch in 1891 considered the disastrous sereh disease of Java as primarily due to the destruction of the root tips by some soil-inhabiting animal. However, typical sereh was soon differentiated from what is now known as root rot in that country and, curiously enough, the most extensive investigations of the latter disease, made by Kamberling, indicated that a similar root mutilation was probably the initial cause. Although in several of his publications between 1900 and 1904, Kamberling refers to the typical holes and other malformations as appearing to have been "eaten" in the roots, his final conclusion was that such abnormalities were due to mechanical resistance of the soil particles. His hypothesis has apparently never been accepted, and to the

writer's knowledge no fuorther investigation has been made to determine the cause of the root injuries which he described.

In Hawaii the possible relation of animal organisms to root rot, or "Lahaina disease", was suggested by Kunkel in 1922. Preliminary investigations by Swezey and Pemberton disclosed extensive root damage by soil-inhabiting animals not only in many "root-rot fields" but also in others where the cane was in a more thrifty condition. They found that the cane roots were gnawed to some extent by three kinds of snails, several kinds of sow bugs, a species of mite, and the threadlike centipede (*Mecistocephalus maxillaris*). The latter animal has lately been reported on in detail by Pemberton. It is somewhat similar in appearance to the longer of the two previously mentioned species of centipedes found attacking cane in Louisiana.

Although at first the Hawaiian workers were inclined to attach great importance to such animal injury as a factor in the local root-rot problem, they now apparently consider it only of minor primary significance. According to recent papers by McGeorge, attention is being directed toward chemical influences of the soil, especially the possible toxic effect on the cane roots of acid salts of iron, aluminum and manganese. The chemical phase of the problem should also be investigated in Louisiana. However, as pointed out by various investigators, similarity of symptoms of the trouble in different countries or in different regions of the same country does not necessarily imply the same cause or causes. Nevertheless, the condition of occasional backward fields in Louisiana suggests the operation of some deleterious chemical or microbiological factor. Judging *a priori* from the known effects of repeated cropping of the same land in the case of other plants of the grass family—the cereals—the discovery of similar phenomena in sugar cane would not be surprising. It would supply an additional reason for the apparently increasing uncertainty of success in the cultivation of the old-established varieties.

If it is true that the root disease has steadily increased in importance in Louisiana, as the history of the industry indicates, it is probably due to the gradual development of a combination of factors unfavorable to the plant and operating to the advantage of the pests. The mechanical condition of the soil in old cane lands is now doubtless more favorable for their multiplication than in the earlier years of the industry. In preparing the seed bed, the heavy soils are more difficult to pulverize, leaving large crevices between the clumps, and when once settled the honeycombed structure resulting from burrowing earthworms remains nearly intact, so that the soil-inhabiting pests have abundant access to the roots. This is probably due partly to deflocculation of the fine soils particles in the absence of lime and also to the lack of enough vegetable detritus to keep the soil friable.

There is no question that the heavier soils have steadily deteriorated in physical condition as the

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original supply of coarse vegetable matter characteristic of virgin lands has disappeared. The occasional plowing under of quickly rotting leguminous crops, although of great temporary benefit, has apparently not maintained this desirable physical state. The soils are generally so compacted under the stubble crops that, apart from disease and possible differences in fertility and other factors, the roots of the common varieties of cane apparently have much difficulty in penetrating them.

(Continued next issue)

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An observant friend, Mr. E. F. Dickinson, directs attention to the fact that the borers, now beginning to commit preliminary depredations here and there, are, on many plantations, prevalent in comparatively small spots and areas, while the bulk of the cane has not yet been invaded. He points out the advantage of vigorously rogueing and destroying these little centers of borer activity, thus eliminating neuclii and preventing the propagation of innumerable borers later by the present vanguard. The principle is the same as that involved in the destruction of the first few house flies that appear in the spring. One fly killed in March may result in a million less flies in September. It is a sound principle, and very applicable indeed to borers whose rate of propagation is by arithmetical progression just like that of house flies.

Cane Borers

On the front cover of this issue we print an announcement authorized by Dr. W. E. Hinds, of the Louisiana Experiment Station. It refers to borer control work and, as such, deserves everybody's earnest attention.

In this connection we take the liberty of pointing out to the readers of the Sugar Bulletin that on many places, in the older corn, the borer is at work and evidences of his presence in the stalks is easily seen on the outside of the stalk where he has bored in. Such corn should be immediately cut and fed to stock and such portions of it as are not eaten by the animals should be crushed or otherwise destroyed so as to kill the borers in the stalks. All this is a practical procedure, easily comprehensible to anyone. All spare labor ought to be put at the work of examining the older corn for evidences of the borer's presence and where such is seen immediate cutting and feeding of the infested corn, and the destruction of all parts of it not eaten by the stock should be rigorously performed. By no means allow the uneaten portions of the stalks to lie around, else you may have all your trouble for nothing. Be alert and omit nothing that will reduce the borer menace, and **do it now.**

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30 tons, more or less, of P. O. J. 213 at Canal Point, Fla.

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Dr. W. R. Dodson,
Dean & Director Louisiana
Sugar Experiment Sta.,
Baton Rouge, La.

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THE
SUGAR BULLETIN

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The Weather

This is an essay on the weather.

The weather is composed of rain, sunshine, cold, heat, freezes, frosts, thaws, winds, calms, fogs, hail and other meterological phases so numerous that we cannot just now recall every one of them.

The weather may also be imaginatively considered as God's countenance, registering or reflecting his frowns and smiles through storms and sunshine. His gentle caress through tiny breezes, His fierce displeasure through the roaring hurricane.

The weather is all these many, many things.

But still it seems to be not enough things for some people.

They want it to be also an Alibi Hatrack.

* * * * *

General George Washington, who is called the Father of this country, and some of whose paternal guts all we Americans should consequently possess, went through an historical experience with the weather at Valley Forge. The weather froze his soldiers' toes and spread pneumonia among his thin battalions. It would probably have given them all "la grippe" too, if that windfall for the medical profession had then been invented. In the midst of a snowstorm he hustled his shivering army across the Delaware and knocked the British for a row of ashcans.

George wasn't looking for a good excuse for losing. He wanted to win.

* * * * *

Blaming things on the weather is as dangerous and insidious as morphine. Nobody can change the weather, so when we say something is the weather's fault we say that it isn't our fault. We put it up to God and there cannot possibly be a mental soporific more damaging to us than that.

* * * * *

There have been three successive crop failures in Louisiana and every now and then we hear somebody say that they were all due to the weather. A whiff of ether to ease the stabs of conscience—that's all that such a statement is. And whoever foolishly inhales that pleasant lethal gas will die—industrially.

The truth is that we had unfavorable weather, to be sure, but because of lack of foresight, because we and our scientific guides and mentors had been letting well enough religiously alone for fifteen years, because disease had crept into our cane and pests into our soil, because drainage had been neglected and seed selection not perfected, because no adequate supply of new varieties of cane had been introduced as was done during the same interim in every other sugar producing country of the world, and because of a dozen other sins of omission and commission our crops had the same chance against bad weather that a house of cards has against a cyclone.

Let us face the facts. Hiding behind the skirts of the Almighty is not a real man's job.

THE
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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Root Disease Of Sugar Cane In Louisiana

By R. D. Rands,
Pathologist, Office of Sugar-Plant Investigations, Bureau of Plant Industry.

(Continued from Last Issue)

During recent years the vigor of the cane has probably been greatly reduced by mosaic; this has doubtless increased the damage from root troubles, because any condition, constitutional or environmental, which causes slower root growth allows the animals more time in which to destroy the root tips and thus prevents or retards the establishment and normal development of the plants.

Another aspect of the subject of the increasing importance of root disease is concerned with the possible significance of the general adoption of artificial chemical fertilizers in place of crude tankage and other organic manures formerly put into the ground with the seed. The prolonged stimulating effect on the plant of the latter materials is no longer present. They may possibly in addition have a biological significance. Decaying tankage, cane trash, and humus materials support rich mold growth in the soil. The small snail which feeds on the cane roots apparently also likes certain molds. Whether or not cane roots are its preferred food, it can readily exist without them; in fact, it lives in its supposedly native habitat in old rotting logs. The gradual decrease of mold growths in the soil on account of diminished plant refuse following the burning of trash, insufficient green manuring, and the abandoning of crude organic fertilizers has possibly turned these little animals more and more to the cane roots as a source of food.

ROOT ROT.

Root rot in a great many cases is directly traceable to wound infection by a number of soil-inhabiting microorganisms. Incipient decay often appears within a few days after the snails or centipedes have fed on the roots. Sometimes, however, the frayed edges of the pits, or cavities, merely shrink and apparently never become infected. Where subsequent rotting occurs it may, under certain conditions, suppress and destroy more roots than are directly affected by the animals themselves. It is more common under very moist than under dry conditions. Thus, during the dry weather last spring very little rotting was evident on the severely injured roots of fall-planted cane. However, after the first heavy rains in May it became very common and apparently did considerable damage to the already deficient and weakened root systems, resulting in further retardation in growth and delay in suckering.

The decay of the roots is usually manifested by reddish, brownish, or black-colored areas. These should not be confused with the natural darkening and shrinkage of dying root cortex on old roots, which are normal processes in the development and maturity of all healthy cane roots. The latter begin a few inches back of the white terminal portion of the root, after the central active bundle of food and water conducting strands has become well protected by the deposition on its surface of a hard, waterproof layer or sheath. This wiry armored core of all mature roots is thus naturally fairly well protected against the parasites. It is therefore toward and on the soft elongating undifferentiated terminal portion that animal injury and subsequent discoloration and rotting are particularly serious.

It has already been stated that discoloration and decay commonly follow snail and centipede injury to the roots. Isolation and pureculture study in such cases reveal the presence of a number of soil-infesting fungi. These are species of Fusarium, Rhizocto-

nia, Marasmius, Sclerotium, Colletotrichum, Penicillium, Mucor, and other molds. Bacteria also are frequently present.

Observations during the seasons of 1924 and 1925 indicate that a large proportion of the root decay was probably a secondary phenomenon to snail and centipede injury, but there is no definite proof that all cases of root rot start from such wounds; in fact, decayed roots and lesions on otherwise apparently healthy roots have been found on which no snail or centipede pitting could be seen. However, these observations do not necessarily admit the conclusion that no wounds were present. They may have been very small, and the shrinkage of the decaying tissues may have merely obliterated their identification. A study of the feeding habits of young snails in confinement shows that they often make only microscopic wounds. In passing along a root, they have been observed to eat at the root hairs and take a few nibles at the root cortex in several places before finally selecting a spot to drill a hole. All signs of such small injuries, which in the fresh condition are scarcely discernible with a high-power magnifying glass, quickly disappear upon becoming infected. Therefore it is possible, although not proved, that most of the root rot in Louisiana starts by infection through injuries caused by snails, centipedes, or other soil-inhabiting animals.

Enough has been said to indicate the complexity of the problem of determining the relative importance of primary and secondary agents in cane-root deterioration. Much more time and controlled painstaking experimental work will be necessary to probe its various ramifications. Possibly it may then be shown that root rot, independent of animal injury or other predisposing conditions, is more important as a primary factor than now appears to the writer from purely observational evidence.

(Continued next issue)

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The yields obtained from a number of field tests carried through a period of several years on six different West Indian plantations show the following average returns as a result of the use of Nitrate of Soda as a sugar cane fertilizer:

An average application of 320 lbs. of Nitrate of Soda per acre produced an average yield on these plantations of 68,401 lbs. of cane, or an average increased return due to Nitrate of 23,178 lbs. of cane, or 2,540 lbs. of 96 sugar per acre.

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Field Day July 20

Sugar planters are urged by Dr. W. R. Dodson, Dean and Director of the Sugar Experiment Station of Louisiana State University to visit the station Tuesday, July 20, annual field day. The planters, on this visit, will have the opportunity of making direct comparisons of the merits of the various seedling canes and may inspect the beet sugar machinery that recently has been successfully operated in making beet sugar.

Cane Borer Control

By W. E. Hinds, Entomologist Louisiana Extension Service

During the week of June 21st to 26th some sixteen meetings of cane growers were held at central points, through the co-operative arrangement between the American Sugar Cane League and the Louisiana Extension Service. Two tours were held, one conducted by Dr. W. E. Hinds and the other by Assistant Entomologist of the Louisiana Experiment Station, Dr. Herbert Spencer.

A large attendance of cane growers and managers is reported from these meetings. The growers were shown how to recognize cane borer work in the early maturing corn where the first generation of borers is concentrated as a general rule. The most certain sign of the borer infestation is found in rows of very fine holes extending across the tips of the corn leaves. These holes are made by the newly hatched borers as they work in the leaf-roll of either corn or cane.

Examination of the stalks which were split open in the field confirms this external evidence and shows that a very large proportion of the borers in any corn field may be taken out by cutting out these infested stalks at the surface of the ground. The stalks should then be fed to farm animals wherever possible. Special attention should be given to seeing that the harder butt portions are destroyed by feeding to hogs or by burning if they have become too hard for mules and cattle to eat them completely.

Many planters have started this control work and found that one man can cut out the infested stalks on from five to ten acres of corn per day. A helper removes these stalks from the rows to the headlands and they are then hauled immediately to the feeding place. Stalks should never be left lying on the ground for more than a few hours as borer moths are liable to emerge from them over night.

By utilizing the attractive effect of early maturing corn it is plainly possible to control the first generation of borers to a very important degree and prevent much later infestation in cane.

United States Senate Approves Taking Agricultural Costs In Tariff Investigations

"Whereas for about two years the United States Tariff Commission has been conducting an investigation into the cost of production of certain vegetable oils in the United States and other countries; and

"Whereas American farmers are in direct competition with the Oriental producers of the raw materials from which these oils are extracted; and

"Whereas the same reasons for the investigation of vegetable oils apply with equal force to a like investigation of the costs of producing peanuts, soy beans, and cottonseed: Therefore be it

"Resolved, That the United States Tariff Commission be, and it is hereby, requested forthwith, under the provisions of section 315 of the United States tariff act approved September 21, 1922, to make an inquiry into the cost of the production of peanuts, soy beans, and cottonseed in the United States and in those countries which may be deemed by the commission to be the principal countries of competition, and to report its findings to the President of the United States."

On Tuesday, May 25, 1926, the above Senate resolution No. 230, by Senator George of Georgia, was considered by unanimous consent, and without objection passed. This resolution applies with equal force to sugar-cane and sugar-beets. The clear purpose of the resolution is to express the approval of the Senate in recognizing agricultural costs and the interest of the farmer in the tariff laws, tariff investigations, and tariff rate-making.

The farmers who grow peanuts, soy beans, and cottonseed in the United States are truly in direct competition with the Oriental producer of the raw materials from which competing vegetable oils are extracted. Even more directly are the sugar-cane and sugar-beet farmers of America in direct competition with the actual growers of sugar-cane in the country of principal competition.

This unanimous expression of the Senate fully justifies and approves the contention of American sugar producers that the agricultural costs of both domestic and foreign sugar be included in all investigation and considerations of costs of sugar production.

A Letter From Dr. Hinds

American Sugar Cane League of the U. S. A., Inc.,
407 Carondelet Street,
New Orleans, La.

I would like to add that we are finding what I would take to be a very heavy infestation of cane borers, especially in early planted corn adjacent to cane fields of 1925. Here at Baton Rouge the first work on corn or cane appears to have started about

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Your costs per acre for rent, seed cane, labor, and general overhead of operating remain pretty much the same whether you produce 15 tons per acre or 25 or more tons per acre. Fifteen tons per acre may mean no profit, or a loss—but twenty-five or more tons per acre, a good profit for your years work, after paying for the cost of the Bull Dog Brand Fertilizer used.
The use of Bull Dog Brand Fertilizer often makes that much, or a greater, difference in the yield—and the increased profits more than pay for the fertilizer, leaving a substantial margin of gain.

For over twenty-five years Bull Dog Brand Fertilizer has been helping sugar planters to get the most out of the soil. Its use has brought profits to many. Use it for your 1926 crop. It will get results for you.

We are also prepared to supply Acid Phosphate, Superphosphate, Sulphate of Ammonia, Nitrate of Soda, Cyanamid and Potash Salts to those planters who prefer to make their own mixtures, and to those who are planting cotton or rice, as well as cane, we offer our high-grade mixed fertilizers, especialy made for tholse crops.

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Phones Main 3592-5734

Bull Dog Brand Fertilizer

the first of May. None or our borers have yet reached full growth here.

However, we have reports of borers of the first generation in the adult stage at Franklin—according to Mr. Kemper in that section. Borer attack on early corn is also reported as exceedingly heavy at this time.

The Experiment Station and Entomological Staff is pushing as rapidly as possible the preliminary work designed to give us a basis for recommendation—First, as to the practicability of utilizing early planted corn as a trap for the first two generations of borers. More than one planting of corn may be necessary to accomplish this result; but our observations thus far indicate that the attack on corn adjacent to cane areas is at least twice as heavy at this time as the attack on cane. It appears, therefore, that properly handling of this early heavily infested corn may reduce considerably the subsequent attack on cane.

Second—The experimental work is including a large series of tests of new insecticide materials on corn and cane to see whether the borers can be controlled by any such treatment in either corn or cane.

It is our hope that by the middle of July we may have sufficient information along these lines to justify some tentative recommendations. We do not expect to be able to solve the entire weevil control problem without much more extensive work.

A very heavy infestation of "grass worms" (*Laphygma frugiperda*) is occurring through a large area in South Central Louisiana—apparently heaviest in the area between the Mississippi River and Bayou Lafourche. These worms feed by preference upon native grasses—especially, crab grass and wire grass—but when the grasses become exhausted, they attack very readily sugar-cane, corn, sorghum and practically all other field and garden crops except cucumbers, squashes and melons.

The most effective treatment for grass worm control is to spray with a solution containing 1½ to 2 pounds of powdered arsenate of lead with 3 or 4 pounds of hydrated lime to 50 gallons of water. This spray should be applied so as to reach the undersides of the leaves, or in the case of corn and sorghum to drive some of the spray deep into the heart of the plants. The young worms feed upon the undersurface of the leaf until they are about half grown—when they begin to eat through the leaf.

Dusting with arsenicals is not nearly as effective and satisfactory as the spray indicated above, but can be utilized in an emergency and will give some measure of relief.

The development of these worms requires about 30 days from eggs to adults; and five or six generations may occur during the season. As a rule, however, only the first two or three generations are serious as the natural enemies of the grass worm are likely to check its development after that time.

Very truly yours,
W. E. HINDS,
Entomologist.

Sugar Beet Experiments

Baton Rouge, La., June 25th, 1926.

Mr. Reginald Dykers,
5th Vice-President and General Manager,
American Sugar Cane League, U. S. A.,
New Orleans, La.

Dear Mr. Dykers:

In the absence of Director Dodson, I am submitting for publication in the Bulletin, the following statement in regard to the sugar beet experiments:

The first beet sugar ever produced in the South was made at the Experiment Stations, Louisiana State University, Baton Rouge, during the past two weeks. This pioneer work was made possible by the close cooperation of some of Louisiana's foremost sugar planters with the Sugar Experiment Station. Beets were grown by individual sugar planters and shipped to Baton Rouge, where they were worked up into a finished product.

In conducting this work much valuable data in growing sugar beets and working them up, were secured. These data have not yet been compiled; in fact, the sugar house is yet at work on low-grades and re-melts and some of the late planted beets are still in the field. At as early a date as possible, the findings will be given out in bulletin form.

We are justified in saying that no problem beyond our control has developed and we feel encouraged to go ahead in our efforts to establish a beet sugar industry in Louisiana. With the experience gained in growing and handling sugar beets and some improvements which have been planned for, plans are now under way for growing at the University and at points near enough to make easy delivery of beets to the University sugar house, sufficient beets for a twenty or thirty days' continuous run during next year.

Very truly yours,
W. G. TAGGART, Assistant Director.

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The American Sugar Cane League offers for delivery on or about Nov. 1st, 1926, the following amounts of P. O. J. 234 cane:

IN ASSUMPTION PARISH
8 tons, more or less, at the plantation of Godchaux Sugars, Inc.
6 tons, more or less, at the plantation of R. C. Martin Sons, Inc.
8 tons, more or less, at the plantation of R. L. Baker.

IN ASCENSION PARISH
8 tons, more or less, at the plantation of Picard & Geismar.
8 tons, more or less, at the plantation of Percy Lemann.

IN AVOYELLES PARISH
6 tons, more or less, at the plantation of Dr. W. D. Haas.
8 tons, more or less, at the plantation of Penick Molasses Co.

IN EAST BATON ROUGE PARISH
8 tons, more or less, at the plantation of H. L. Staring.

IN WEST BATON ROUGE PARISH
8 tons, more or less, at the plantation of Cinclare Central Factory.
8 tons, more or less, at the plantation of H. Wilkinson, Jr.
8 tons, more or less, at the plantation of Milliken & Farwell.

IN IBERVILLE PARISH
8 tons, more or less, at the plantation of G. M. Murrell Pltg.Co.
8 tons, more or less, at the plantation of A. H. Gay Sugar Co.

IN JEFFERSON PARISH
8 tons, more or less, at the plantation of Willswood.

IN LAFAYETTE PARISH
10 tons, more or less, at the plantation of Pierre Landry.

IN LAFOURCHE PARISH
8 tons, more or less, at the plantation of Godchaux Sugars, Inc.
15 tons, more or less, at the plantation of Barker & Lepine.

IN POINTE COUPEE PARISH
4 tons, more or less, at the plantation of Lacour Plantation Co.

IN RAPIDES PARISH
6 tons, more or less, at the plantation of Meeker Sugar Refining Co.
8 tons, more or less, at the plantation of Shirley Co., Inc.

IN ST. CHARLES PARISH
8 tons, more or less, at the plantation of Ellington Sugars, Inc.
8 tons, more or less, at the plantation of Godchaux Sugars, Inc.

IN ST. JAMES PARISH
8 tons, more or less, at the plantation of Webre Steib Co.
8 tons, more or less, at the plantation of L. Keller & Co.

IN ST. JOHN PARISH
8 tons, more or less, at the plantation of T. Lanaux's Sons.
8 tons, more or less, at the plantation of Godchaux Sugars, Inc.
8 tons, more or less, at the plantation of San Francisco Pltg. Co.

IN ST. LANDRY PARISH
6 tons, more or less, at the plantation of Dr. W. D. Haas.

IN ST. MARTIN PARISH
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THE SUGAR BULLETIN

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FIELD DAY AT BATON ROUGE

We now repeat to our readers the announcement made in our issue of July 1st to the effect that Dr. W. R. Dodson, Dean and Director of the Louisiana Experiment Station, has invited all the sugar planters in the State to visit the Station on Tuesday, July 20th, which will be the occasion of the annual Field Day. The Experiment Station at Baton Rouge thoroughly deserves the compliment of a visit. The fields planted in sugar cane are carefully laid out, with each variety properly marked and labeled, and the whole area is kept in splendid condition, and all of our planters should go there not only once a year, at the time of the annual Field Day, but at frequent intervals. It is a great pleasure to us to pay a high encomium to the physical appearance of the sugar cane experimental plots at Baton Rouge and we sincerely hope that a very large number of the members of the League will show their appreciation of what has been done there by the station authorities, and that they will attend the Field Day and express in person to Dr. Dodson and his assistants their gratification concerning the work that has been done, and is being done, since the removal of the station from Audubon Park.

Remember the date—Tuesday, July 20th. Dr. Dodson and his staff will keep open house on that day and all are welcome.

THE
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The American Cane Growers' Assn.
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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Fifty Thousand In The War Chest

One of the most outstanding accomplishments of the American Sugar Cane League has just been successfully completed and consists of the securing from the Louisiana Legislature, at its session just terminated, of an annual appropriation of $25,000.00 a year for two years, to be expended for additional investigational work and for disseminating information on sugar cane problems in the cane sugar territory by the State Experiment Station. The authorities of the Station are to expend this money along lines to be decided on by them in consultation with a committee to be appointed by the American Sugar Cane League. The President of the League, Mr. Stephen C. Munson, has appointed a committee for this purpose composed of Mr. A. W. Wallace of Cinclare as Chairman, Mr. Charles C. Krumbhaar of Houma, Mr. C. D. Kemper of Franklin, and Mr. J. Numa Thibaut of Napoleonville. It seems to be generally agreed that the first and most important work to be undertaken will be in connection with cane borer control, which is the outstanding problem that confronts us at the present time. The State Experiment Station has been considerably hampered in carrying on this vital work, through lack of funds, and the $25,000.00 per year now available will enable them to vastly extend intelligent warfare on the cane borer pest.

The movement to secure this appropriation dates back to March, 1926. At a meeting of the Executive Committee of the American Sugar Cane League on March 25th, President Munson made an address concerning the necessity of obtaining from the Legislature a sum of money to be expended directly on sugar cane work. Mr. Munson's idea in this connection met with the strong endorsement of the committee and ever since that time an active campaign has been carried on, in which the President of the League has been a leading figure, to obtain from the Appropriation Committee of the Legislature sufficient money to accomplish something worth while.

The following resolution was drawn up and presented to the Governor and every member of the Legislature:

WHEREAS, it is widely known and everywhere realized that the sugar industry of Louisiana, which constitutes an exceedingly large proportion of the State's fiscal and economic life, has suffered successive losses through crop failures, so serious as to threaten its extinction, and

WHEREAS, it has been the experience in other sugar producing countries, where similar crises have prevailed, that the profitable production of sugar cane has been restored only by and through the expert help contributed by the skilled staffs of the Experiment Stations of those countries, and by and through the capable supervision of the efforts of the farmers by the expert workers connected with the Experiment Stations,

THEREFORE BE IT RESOLVED, that the American Sugar Cane League, representing practically the entire sugar growing and sugar producing community of Louisiana, and having an actual membership of about 5,000 men, petitions the Legislature of Louisiana for an annual appropriation of $25,000.00 each year for two years to be used by the Louisiana Experiment Station in employing ways and means to retrieve the sugar industry of this State, especially on its agricultural side.

A canvass of the members of the Legislature at Baton Rouge showed that there was very little opposition to the request of the League and the official participation of the League in the formulation of the plans to be adopted governing the expenditure of the money is embodied in the act which the Legislature has passed.

The committee named above, under the leadership of Mr. Wallace as Chairman, will now confer with the State Experiment Station authorities and prepare plans for the use of the money in ways that promise the most immediate and practical results possible.

Adequate Testing Of Sugar Cane Varieties

By
R. D. Rands, *Pathologist and* F. D. Stevens, *Associate Agronomist, Office of Sugar Plants, Bureau of Plant Industry, United States Department of Agriculture.*

Now that the interest of Louisiana sugar planters is generally aroused over the possibilities of disease-resistant cane varieties, it seems appropriate to briefly review the essentials for judging the adaptability and commercial value of such new canes. The slow and costly process of increasing the seed supply of any sugar cane justifies careful consideration of this matter. Inadequate information, prejudice, and hasty judgment have condemned or greatly retarded the introduction of many valuable varieties in the past, as all students of sugar cane literature know.

There are now in Louisiana several thousands of sugar cane seedlings and imported varieties being propagated mainly at the local experiment stations and on some eighteen plantations scattered over the sugar belt. Owing to the brief period that the work has been under way, any very definite expression of the relative commercial value of most of the varieties is still largely a matter of personal opinion. Thus the writers are frequently asked—"which of so and so do you consider the best"—to which they must invariably reply either that they do not know or else give the preliminary data with the necessarily long qualifying explanations. The **best** variety for a given locality and soil type can, of course only be ascertained by carefully controlled quantitative tests extending over a period of years. However, this need not retard the introduction and spread of really valuable canes because experience has demonstrated that even one reliable plantation test conducted during a fairly average season will bring out sufficiently the superiorities of such varieties so that no hesitancy need be felt in increasing them that year at least in place of other varieties. This, of course, presumes that all varieties in such a comparison exhibit some commercial promise, having already, in accordance with the co-operative plan of state and federal investigators, qualified from the disease resistance, nursery and line tests at the experiment stations.

The purpose of this paper is to outline and briefly discuss the principles underlying a reliable variety test. Many planters and even some experiment station workers are in the habit of placing great faith in the differences exhibited between a single pair of adjacent "cuts", or squares of cane. The literature of the subject is filled with so-called experiments of this type. While of great interest and indicative value, variety, fertilizer, or other field comparisons of this antiquated sort, even though carried over several years, are often wholly misleading and in the end advance knowledge but little. Anyone can satisfy himself of the inadequacy of such a method of comparison by carefully measuring a few uniform squares of cane of the same variety. This is well illustrated by some figures obtained by the writers in November, 1924, on Southdown Plantation. Six parallel blocks, or cuts, of D-74, three of plant and three of stubble cane, on an apparently very uniform field of light soil, planted, cultivated, fertilized and in all other respects treated alike, were carefully measured, harvested, and weighed. The stand appeared exceptionally uniform, but short on account of the drought of that year. The results were as follows:

Canes	*Acres*	*Tons per acre*	*Tons Difference*	*Percent Difference*
(1) Plant Cane	2.0	17.575	0.00	0.00
(2) " "	4.111	13.413	4.162	31.03
(3) " "	2.494	12.455	5.120	41.11
(4) 1st Stubble	3.0	10.09	0.00	0.00
(5) " "	3.0	9.26	0.83	8.96
(6) " "	3.167	8.562	1.528	17.85

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In spite of the apparently uniform conditions, the yields of the different cuts varied as much as five tons per acre, or approximately 9-41%. Such variations are of course due to a number of accidental circumstances connected with the size of the units measured, as for example, unobservable differences in soil, unequal drainage, variations in rate of planting, fertilizing, disease and pest damage. Even though obscure to the eye, they may nevertheless greatly influence yields. Accidental variation, is of course characteristic of all crops, and it matters not how uniform the land may appear nor how carefully it may have been prepared and the crop planted and harvested, rarely will a given pair of adjacent plots, "cuts", or fields of the same variety give even approximately the same yield. It simply impresses us with the fact that we are dealing with living things which are affected by a whole complex of factors over which we have no control. Obviously, therefore, if the accidental variation between a single pair of plots or cuts of the same variety may amount to 5 tons per acre, it would be useless by such a comparison to attempt to draw conclusions from 5-ton differences between varieties. We would need a finer measuring stick.

Extensive investigations in sugar cane and other crops have demonstrated that accidental variation, or as it is termed by agriculturists, the "probable error", may be greatly reduced by lessening the size of the plots and having many of them arranged in checker-board fashion over the experimental area. This is particularly necessary when the differences to be measured are small, as is often the case between a number of high yielding varieties. The individual variations in yield between the various repetitions of the same variety are smaller due to more uniform sampling of conditions, and are thus largely equalized in the average; and the difference between averages of a series of plots of a number of varieties represents more truly the real or inherent difference in their yielding capacity. However, on account of the probable unequal effect of season on the varieties, a test of this kind should be repeated several years for accurate results, particularly to determine ratooning ability. The necessity for this is partly met by conducting the same test simultaneously in several sections of the sugar belt.

The approximate number of times a variety should be replicated in each test has never been determined under Louisiana conditions. We know, however, that her yields in general fluctuate as much as in many tropical cane countries. In Java and Hawaii where most plot experimentation with sugar cane has been done they find that it pays to run at least six to twelve replications whether it be the testing of a variety, fertilizer treatment, or other agricultural practice. They first determine the regional adaptability of a variety or fertilizer formula and then carry the tests to the individual plantations and fields for the finer adjustments. Each plot is usually one-thirteenth to one-tenth acre in size. A twentieth-acre plot comprising three six-foot rows, 121 feet long is believed to be a convenient harvesting unit in Louisiana. While the unit adopted can of course be adjusted to the field in question, the following more or less ideal arrangement of plots is suggested for minimizing acci-

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dental variation in yields. Given, for example, eight varieties to be tested, numbered for convenience 1 to 8, the last being the standard or control:

(1)	(8)	(2)	(7)	(3)	(6)	(4)	(5)	
(8)	(7)	(1)	(6)	(2)	(5)	(3)	(4)	1st repetition
(7)	(6)	(8)	(5)	(1)	(4)	(2)	(3)	2nd "
(6)	(5)	(7)	(4)	(8)	(3)	(1)	(2)	3rd "
(5)	(4)	(6)	(3)	(7)	(2)	(8)	(1)	4th "
(4)	(3)	(5)	(2)	(6)	(1)	(7)	(8)	5th "
(3)	(2)	(4)	(1)	(5)	(8)	(6)	(7)	6th "
(2)	(1)	(3)	(8)	(4)	(7)	(5)	(6)	7th "

According to this distribution,* each variety occurs next to every other variety twice. The total area planted to each variety is two-fifths of an acre. Two to three buffer rows of D-74 or other cane are planted next to the ditches and in the space between the headland and quarter drain, neither of which is weighed in harvesting. A short gap in the rows at the end of each plot will facilitate inspection and prevent mixing the varieties.

A typical and uniform piece of land is selected and the experiment planted, cultivated, and harvested in the usual way, care being taken, of course, to keep the cane from the different plots separate. The yield from each plot, approximating a fair sized wagon load, is weighed separately and dumped into cars designated for the variety represented. The combined yield of the eight plots of the same variety are then run as a single lot through the mill with a 10-foot gap in the carrier between different varieties. The total weight of raw juice from each variety and its sucrose content together with the other usual data enable the calculation of sugar yield per acre, rendiment, quality ratio, etc., necessary for judging varieties. The reliability of the tonnage yields on which these figures are based is readily ascertained by mathematical analysis of the measured variations between the different repetitions of each variety.

Therefore, our decision about the performance of a variety can in no way reflect personal opinion or prejudice. The test is of course continued on the successive stubble crops, the performance of which in Louisiana determines largely the value of a variety. Later a complete mill trial on the more promising varieties should naturally be made, especially if any characteristics which might influence the usual manufacturing processes have appeared.

While the above suggested plan is doubtless imperfect and capable of improvement with experience, it is believed that if a few varietal tests embodying at least the principles of this newer plot technique are conducted during the next few years, the planters will be aided materially in deciding which of the several disease-resistant canes now on the plantations are superior to the common varieties, are adapted to particular soils, and are worthy of being increased most rapidly. Enough seed cane will be available next fall to start this work fairly extensively in Louisiana, but as already stated several years will be required for conclusive results. Tests of this type were planted last spring under supervision of the Houma Field Station on the Abby and Highland Plantation near Thibodaux, Louisiana, and on the plantation of Mr. P. R. Landry near Lafayette, La. In general every plantation should have a "best" variety for each soil type and enough seed of other varieties in reserve to fairly quickly supplant the first should it at any time develop signs of deterioration. Thus with the many new canes constantly being developed, variety tests properly supervised should become an established routine on a great many plantations.

*This plot distribution was suggested by Dr. Carl Hartley of the U. S. Dept. of Agriculture.

Root Disease Of Sugar Cane In Louisiana

By R. D. Rands,
Pathologist, Office of Sugar-Plant Investigations, Bureau of Plant Industry.

(Continued from Last Issue)

Edgerton, Taggart, and Tims, in a recent discussion of the problem in Louisiana, emphasize the importance of root-rotting fungi, which they apparently consider the major factor in root deterioration. Infection experiments carried out by them with fungi isolated from diseased plants, made on roots grown in glass tubes in the laboratory or in sterile soil, reproduced lesions similar to those found on plants in the field. Although of great interest, it is questionable, considering the obviously abnormal conditions under which the inoculated roots were grown, whethere the same fungi necessarily would attack sound roots in nature. These writers admit, however, that the organisms isolated by them are weak parasites, and they stress predisposing factors, such as unfavorable environment and root-eating animals.

A number of tests are now under way in which it is hoped to isolate and determine separately under natural and varying field conditions the relative influence of the root-mutilating and root-rotting phases of the disease. Thus, in some experiments the animals have been killed by fumigating the soil along the cane row, and the effect of the rotting organisms in the absence of animal injury has been studied. No conclusive evidence is yet available, but soil fumigation has demonstrated a pronounced preventive, effect on the occurrence of the disease, that is, on both injury and rotting.

(Continued next issue)

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8 tons, more or less, at the plantation of R. L. Baker.

IN ASCENSION PARISH
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8 tons, more or less, at the plantation of Percy Lemann.

IN AVOYELLES PARISH
6 tons, more or less, at the plantation of Dr. W. D. Haas.
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IN EAST BATON ROUGE PARISH
8 tons, more or less, at the plantation of H. L. Staring.

IN WEST BATON ROUGE PARISH
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8 tons, more or less, at the plantation of H. Wilkinson, Jr.
8 tons, more or less, at the plantation of Milliken & Farwell.

IN IBERVILLE PARISH
8 tons, more or less, at the plantation of G. M. Murrell Pltg.Co.
8 tons, more or less, at the plantation of A. H. Gay Sugar Co.

IN JEFFERSON PARISH
8 tons, more or less, at the plantation of Willswood.

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10 tons, more or less, at the plantation of Pierre Landry.

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8 tons, more or less, at the plantation of Godchaux Sugars, Inc.
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8 tons, more or less, at the plantation of L. Keller & Co.

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8 tons, more or less, at the plantation of T. Lanaux's Sons.
8 tons, more or less, at the plantation of Godchaux Sugars, Inc.
8 tons, more or less, at the plantation of San Francisco Pltg. Co.

IN ST. LANDRY PARISH
6 tons, more or less, at the plantation of Dr. W. D. Haas.

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40 tons, more or less, of P. O. J. 36 at Canal Point, Fla.
20 tons, more or less, of P. O. J. 213 at Canal Point, Fla.

These canes are offered at $60.00 per ton for the P. O. J. 36 and $50.00 per ton for the P. O. J. 213, delivered at railroad station of purchaser. Terms, cash at time of delivery.

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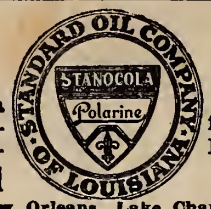

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THE

SUGAR BULLETIN

Entered as second class matter April 13, 1925, at the postoffice at New Orleans, La., under the Act of March 3, 1879.

We stand for the encouragement of Home Industries as against foreign competition.

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In Memoriam

Mr. John M. Rogers, Washington Representative of the American Sugar Cane League, died on Thursday, July 29th, at 11:15 P. M., at his home, 1717 Irving St., N. W., Washington. Mr. Rogers had been in ill health for about a year, and several months ago, on the insistence of the President of the American Sugar Cane League, who had been privately informed by Congressman W. P. Martin of Mr. Rogers' condition (which he never himself spoke of or complained of), he consented to take a sixty day leave of absence. He returned from this vacation apparently much improved and the news of his death comes as a terrible shock.

A eulogy of Mr. Rogers might well consist of just a half dozen words. He was loyal, faithful, able, square, conscientious and unafraid. Every member of the American Sugar Cane League admired and loved him. The officers of the League who were brought in close contact with him, and who had occasion and opportunity to see the the private side of his character, knew that its outstanding feature was a spirit of eager helpfulness towards everybody for whom he could possibly perform either a personal or an official service. He was a splendid, intelligent, broad-minded, clean and upright gentleman.

He died at his post and in the line of duty. No hero lies in Arlington of whom that can be more truly said.

THE
SUGAR BULLETIN

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The Louisiana Sugar Planters' Assn.
The American Cane Growers' Assn.
The Producers & Mfgrs. Protective Assn.
Subscription Price, 50 Cents Per Year.

John M. Rogers, Washington Representative,
810 Union Trust Bldg., Washington, D. C.

Reginald Dykers, General Manager & Editor of the Bulletin,
301 Nola Bldg., New Orleans.

Wm. H. Chaffe, Secretary,
301 Nola Bldg., New Orleans.

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Chairman Publicity Committee

Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

The Field Day

Incredulity works in two ways—It can guard men from gullible acceptance of folly or it can keep men from belief in amazing truth.
—Harry Emerson Fosdick.

The Louisiana Experiment Station is perpetuating the beneficial and instructive Annual Field Day which was inaugurated about twenty years ago by the Louisiana Sugar Planters' Association. It is the custom on the Field Days to invite all the sugar planters of Louisiana to visit the Experiment Station, inspect the work being done there and listen to addresses on appropriate subjects.

On the 20th of July the Field Day of 1926 was held at the Experiment Station at Baton Rouge, which, in the beautiful and artistic setting supplied by the new University, offers unsurpassed advantages for such an occasion. As might have been expected this year, the planters, managers and overseers attended in very considerable numbers, some 250 or 300 being present, and there was a great deal to interest them, including the field plots where a large number of new varieties of cane are being grown under clean and well-ordered conditions, affording them an opportunity to compare the appearance of the different varieties. Plots of cane planted with selected seed of the old varieties were also shown, to indicate the improvement that can be had by careful seed selection through a series of years. The members of the Station Staff, led by Dr. Dodson, who possesses incomparable skill as a leader and presiding officer on such occasions, explained the different phases of endeavor belonging to their several departments. The work being done by the Department of Entomology, headed by Dr. W. E. Hinds, in connection with the fight on the cane borer, naturally came in for a large amount of attention, as the cane borer problem is so acute just now. With the aid of the $25,000.00 appropriation obtained by the American Sugar Cane League from the Louisiana Legislature, supplemented by some appropriations from the League's own treasury, Dr. Hinds is fortunately in a position to carry out certain plans and ideas for cane borer extermination without being hampered by lack of funds and there will be ample opportunity to determine how much practical merit his plans have. He has been given a clear field.

The addresses and explanations of Dr. C. W. Edgerton of the Department of Plant Pathology, Mr. D. N. Barrow in connection with sugar beet work, Dr. W. R. Perkins concerning soybeans, and Mr. W. G. Taggart concerning seed cane selection and cane varieties were all listened to eagerly and attentively.

The subjects of new cane varieties and the fruits of seed selection were close seconds to the cane borer control, and perhaps exceeded it, in engaging the interest of the crowd. Mr. Taggart said there are a number of promising varieties among the 2000 or more seedlings growing at the Experiment Station and he referred to some of them, for instance P.O.J. 979, as very promising.

But as none of these canes except P.O.J. 213, P.O.J. 234 and P.O.J. 36 have been yet released for distribution by the Government the immediate and very critical situation is affected by those three canes alone, which is a fact that everybody recognizes, and the decision that has to be arrived at by the planters now is whether to discard the old varieties and plant these three particular new varieties, or not. The feeling that a definite "yes" or "no" to this question would be welcome to the visitors, was patent and some questions were asked. In reply to a query Mr. Taggart said that last winter the P.O.J. 234 cane had shown about as high or a higher sucrose content than D. 74. In reply to a question by Mr. Theriot he said that

the cane known as P.O.J. 979 which he thought very highly of, had not shown a higher sucrose content than D. 74. Then came a question from Mr. George Pitcher that came within an ace of leading the canny but uncommunicative Mr. Taggart to wreck his reputation as runner-up to the ambiguous oracle of Delphi. For a split second it sounded like Mr. Taggart was going to make a definite pronouncement but he seemed to bethink himself in the nick of time and cast the customary Delphic smoke screen. Said Mr. Pitcher: "Mr. Taggart, would you recommend to a planter, who has sufficient P.O.J. 234 seed cane to do it, that he plant half or all his place in that variety?" Mr. Taggart's reply was: "I would—and I wouldn't."

As a non-committal answer this registered exactly 100%.

It looks a bit as though the gentlemen connected with the Louisiana Experiment Station prefer to avoid whatever responsibility may attach to any flat footed recommendation, either one way or the other, on the subject of the immediate wholesale planting of P.O.J. 234, P.O.J. 213, or P.O.J. 36. There are no other new canes available, no other new canes that it is permissible to plant under the regulations of the United States Bureau of Plant Pathology, at present, hence P.O.J. 979 and various other canes that show promise may be safely described in glowing colors without assuming any responsibility, for nobody is allowed to plant them. The immediate and permissible choice lies on the one hand between getting along with D. 74 or the Louisiana purple and striped, assisting their disease resistant qualities by the slow, tedious and long drawn out process of seed selection, with the final result in doubt, and on the other hand the immediate planting of as large an area as possible in P.O.J. 234, P.O.J. 213 and P.O.J. 36, the first named variety alone being in plentiful supply. There are just these two horns to the dilemma. This decision, it appears, will probably have to be made by the planters without definite advice from the Louisiana Experiment Station. Because of the necessity of doing something instanter or being financially unable to plant cane at all, which the State officials, with that lack of perception of the practical side of things which affects so many purely scientific men, apparently do not see, it is likely that most planters will choose possible and probable quick salvation from the new canes rather than the risk of bankruptcy while trying to bring the old canes back to a profitable basis by several years of seed selection.

The Experiment Station has unfortunately wandered in this matter into a cul-de-sac from which it must inevitably emerge sooner or later with diminished reputation. Should the available new varieties, for instance P.O.J. 234, be planted extensively this fall and the movement prove detrimental to the industry, there will be a widespread feeling that the Experiment Station should have issued a clear cut, emphatic and unequivocal warning. Per contra, if the new canes retrieve the situation there will be an equally widespread feeling that the undertaking was carried out by the planters quite independently of their official State guides and mentors, who, in the moment of peril, acted with indecision and put it up to the planters to launch their own life-boat.

The issue is one that cannot be postponed nor straddled. It is one that cannot be clouded by dissertations on still better canes, the release of which is merely in embryo. It is a dollars and cents issue, a bread and butter issue, an issue involving in many literal cases the money for the baby's shoes. It is an issue for a red or a green light—one or the other—and in which any clatter of cryptic language is inappropriate.

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How the Money Will Be Spent

As we have already reported in the SUGAR BULLETIN, the last session of the Legislature, at the request of the American Sugar Cane League, appropriated $25,000.00 a year for two years to be spent through the Louisiana Experiment Station on such work as might be most helpful to the Louisiana sugar industry. It was one of the provisions of the act that the ways and means in which the money should be spent would be determined by the officials of the Experiment Station in conference with and in conjunction with a committee appointed by the American Sugar Cane League.

On July 21st the committee appointed by the League, consisting of Mr. A. W. Wallace, Mr. C. D. Kemper, Mr. Chas. C. Krumbhaar and Mr. J. Numa Thibaut, went to Baton Rouge and conferred with Dr. Dodson, Dr. Edgerton, Dr. Spencer, Dr. Hinds, Mr. Perkins, Mr. Barrow and Mr. Gouaux of the Experiment Station Staff. Unfortunately, Mr. Chas. Krumbhaar was not able to be present.

Dr. Dodson proposed the following program of work:

1. Field study of the spring development of borers in corn, cane or wild host plants.
2. Study of the concentration of cane borer infestation in garden and field corn through first and second generations especially, and to determine practicability of destroying borer stages by cutting out and feeding or otherwise disposing of infested corn before the borer moths emerge therefrom, also control in corn or early cane by insecticidal methods.
3. Study of the distribution of borer infestation in cane and corn especially, to determine distance of flight of moths, attraction to various food plants, and advisable locations of trap corn plants and approximate dates for successive plantings of corn to promote concentration of the borers thereon throughout the season.
4. Study various insecticides possibly useful in cane borer control, including particularly Fluorine Compounds. Provide chemical cooperation in necessary analytical and control work with these insecticides.
5. Study methods of insecticide application to corn and cane including, if possible, some large scale application of most promising material found in preliminary work through cooperative arrangements between some cane planter having suitable conditions for this work and with an airplance dusting service. All insecticidal or other control work to include studies of the costs therefor and degree of borer control secured thereby.
6. Study by field examinations, rather than by laboratory breeding, of the periods covered by successive generations of the borers through the season to determine particularly strategic times for insecticide applications for the protection of cane especially and for correlation with the stage of maturity of corn or other host plants nearby.
7. Study particularly cane varietal differences in susceptibility to or apparent resistance to borer attack.
8. Investigate the effect of various factors in the natural control of borers, for example, including especially the egg parasites and other parasites, predators and climatic conditions.
9. Investigate the reactions of the adult moths to lights of varying intensity to determine the practicability of trap light work.
10. Study the distribution of the borers and the intensity of their attack in various sections of Louisiana and determine, if possible, reasons for striking variations in abundance of borers—particularly in fields near to each other.
11. Study further the hibernation of the borer and of the borer egg parasites especially, and the influence thereon of various methods of handling the cane trash.

Dr. Dodson sated that this would cost a total of about $14,000.00 divided as follows:

Entomologist—W. E. Hinds (Carried entirely on Station Funds)	
Assistant Entomologist (H. Spencer) full time	$ 3,600.00
Field Asst. Entomologist (B. A. Osterberger) full time	1,800.00
Stenographer (N. L. Poirrier) ½-time	900.00
Regular Staff Salaries—Total	$ 6,300.00
Insecticides, equipment, etc.	1,500.00
Travel and field maintenance	1,000.00
Airplane work (Angola offers cooperation)	1,500.00
Student Assistant Labor	3,700.00
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Dr. Dodson explained that in the rearrangement of his staff to undertake this special work, nothing would be done that would result in the expenditure of any less sum of money than has heretofore been utilized from the Hatch and Adams funds for account of sugar cane investigations or from the other funds belonging to the Experiment Station. In other words, such investigations as have been conducted under the Hatch and Adams funds or by the Station out of its own funds along sugar cane lines will be continued in addition to the above program.

Mr. Kemper advanced the idea that instead of employing the students of the University as assistants, at a cost of $3700.00, that the sons of small cane growers and overseers who had selected farm life as their future occupation be employed for this work as he believed that the information gained by these boys would be carried by them directly back to the farms and have a tendency to lead their fathers to adopt more scientific methods, whereas in the case of the University students they would practically all hereafter engage in occupations outside of the Louisiana sugar district and perhaps many of them in foreign countries.

Dr. Dodson took the position that Mr. Kemper's suggestion would not be practicable and said that the work in question must be conducted by intelligent, reliable men, otherwise the information secured would not be dependable. Seeing that he could not have his suggestion prevail Mr. Kemper withdrew it.

On the invitation of Chairman Wallace, Mr. Kemper addressed the meeting concerning damage done to the sugar cane roots by small snails and he considered this so serious, in fact more serious on his own property than borer damage, that he urged some work in connection with the eradication of these snails instead of applying it all to the destruction of the cane borer. He suggested that a survey be made of the sugar district in order to determine whether or not these small and destructive snails are found throughout the entire sugar district and stated that if the damage from the snails was found to be confined to the Sterling property that he would not ask that any of the special fund be expended for the purpose of eliminating snails. Mr. Kemper further stated that the Extension Department of the Experiment Station contemplated employing Mr. Gouaux at a salary of $3600.00 and $1400.00 expense allowance, to do educational and cooperative work on plantations, in the direction of improved fertilizing methods and other such ways of increasing the cane yield, and he did not think that Mr. Gouaux should begin this work until it was first determined whether or not snails existed on plantations in a general way. After some discussion it was decided that the entomologists be instructed to make a survey in order to determine the extent of the presence of the snails throughout the cane belt. It was agreed that this investigation should be made by the same entomologists working on the cane borer control and at the same time that they were working on the cane borer control.

Dr. Dodson agreed to make written reports from time to time to the members of the special committee of the American Sugar Cane League concerning the progress of the work being done.

The meeting then adjourned.

It appears from all this that $14,000.00 of the $25,000.00 of the first year's annual appropriation is to be spent on an intensive drive against the cane borer, coupled with a survey of the snail situation. We think it will be highly desirable if either Dr. Dodson or Mr. Wallace, the Chairman of the special committee of the League, will furnish the League with a report once a month on the work being done and we trust that such a report will be supplied to us for the information of the members of the organization.

The Louisiana Experiment Station

We have before us the Annual Report of the Agricultural Experiment Stations of the Louisiana State University for the year 1925. This report was prepared by the Director, Dr. W. R. Dodson, for submission to the Governor of Louisiana. It is an interesting report, containing, for the Governor's information, a statement of the receipts and expenditures of the Experiment Stations during the year, the latter amounting to $145,118.91, and a synopsis of the lines of endeavor pursued by the different members of the Station staff. Probably a report of this nature is not intended to convey any information or advice to the planters for their guidance in connection with their various problems; anyway, it contains none, relating merely the character of work the different experts have applied their time to.

While conceding this annual report to the Governor to be all that it ought to be, our eager perusal of it in search of practical and helpful information indicates how we grasp at every straw in the hope that the members of the Louisiana Experiment Station staff will depart from their long established policy of reticence and tell us some of the things they know. It appears from the report that no department, of the eleven enumerated in it, issued an official Experiment Station Bulletin during the entire year 1925 except the following:

A Bulletin on Fungus Infection of Seed Corn Kernels by the Department of Agronomy.

A mimeographed report on Cotton Variety Tests by the same Department, headed by Dr. A. F. Kidder. Dr. Kidder has just resigned and gone to South America where his evident desire to say something may be more in keeping with his surroundings, the Latins being a loquacious people.

It is stated in the report that the Department especially related to the sugar industry is stressing cane varietal work; that the Department charged with the conduct of sugar cane test fields has supervised their proper culture and made notes on their growth; that the Department of Plant Pathology had all of the members of its staff spend most of their time during the summer and fall on cane disease work; that the Department of Entomology has worked on three major projects, one of them being the control of the sugar cane borer, and so on.

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Mildly and respectfully, and without the least intent to knock the chip off of anybody's shoulder, we venture the opinion that an expenditure of $145,-118.91 entitles the agricultural interests of Louisiana, and we speak especially for the sugar cane interests of course, to more officially promulgated information in a year than is contained in one regular Bulletin on Fungus Infection of Seed Corn and one mimeographed report on Cotton Varietal Tests. The Department especially related to sugar, and officially designated as the "Sugar Experiment Station" appears to have issued no official informative Bulletin on any subject during the entire year, and going over the record as far back as 1914, twelve years ago, we find in all that time only five Bulletins issued on subjects relating to the agricultural side of the sugar industry, an average of say one every 2½ years. If the annual expenses of the Station during each of those twelve years were approximately what they were during 1925, this means that we have got a Bulletin on some problem pertaining to the agricultural side of the sugar industry just about every so often as over a quarter of a million dollars was spent by the Louisiana Experiment Station. The ratio, or proportion, of money to Bulletins seems rather high.

We think that the members of the staff of the Experiment Station ought to cease to pursue a policy of such extraordinary reticence. The Station is not an annex to any of the State institutions for those who are bereft of speech, nor is it the fundamental idea underlying an experiment station that it is merely a place where a group of scientific men shall saturate their own brains with information We think this has been done *ad extremum* at Baton Rouge Knowledge concerning our sugar cane problems acquired by the members of its staff during the past decade and more must be very considerable; indeed, these gentlemen invariably show themselves able and well informed in private conversation, but if they do not occasionally impart some of their knowledge through official bulletins to the fact-hungry planters it all serves no practical and useful purpose.

A Plan to Make the Louisiana Sugar Cane Industry Freeze Proof

EDITOR SUGAR BULLETIN:

Many attempts are now being made toward saving and perpetuating the Louisiana sugar cane industry. Notably among these attempts are the introduction of new varieties of cane, which are supposed to be highly resistant to the cane borer, and the spraying of poison powder towards the elimination of sugar cane insects.

But this fact is overlooked, that irrespective of the introduction of new varieties of cane, it is impossible to avoid serious losses at frequent intervals from the low freezing temperatures that this state experiences. No cane has yet been found that will withstand our winter climate. It is a fact that almost fifty per cent of last year's crop was ruined by the low temperature, especially on those plantations that were grinding through the month of January.

As far as beets are concerned, this State, in the opinion of the writer, will never produce beets successfully as a major crop, due to the excessive rainfall experienced in Louisiana which fact brings about a condition of root rot in the beets, thereby jeopardizing a beet industry in this State.

The plan that would stand out and put sugar cane again on the map in this State as a healthy business, would be the eliminating of the manufacture of sugar entirely, and, instead, the manufacture of industrial alcohol under one centralized management. In other words, there should be established one large central industrial alcohol plant in which all the sugar factory owners would be stockholders, and by this plan, all of the factories would manufacture a standard Beaume syrup from the cane which syrup each factory would ship to this central alcohol plant for the manufacture of industrial alcohol. Under this plan, each factory would be credited with its quota of syrup and money would be advanced from this alcohol plant towards aiding the sugar factories, and as the alcohol is marketed by this one central plant, each factory would be reimbursed for the alcohol manufactured from its syrup.

This proposition, may seem revolutionary to the Louisiana planter who has always been in the habit of making sugar and in recent years, making it at a loss. *It must be remembered, that under this plan the fear of freezes is eliminated as the writer carried on successful experiments during March of this year, with badly damaged frozen cane, and the syrup was manufactured at two different Louisiana factories, which syrup was found to be of good alcohol producing quality and practically every gallon of this material was sold to distilleries.* Therefore this would eliminate the windrowing expenses on a plantation as it is practical in this case to permit the cane to stand irrespective of freezes, as it is possible to make alcohol out of frozen cane, but not sugar.

Practically one-half of the factory operating expenses would be eliminated, such as the operation of vacuum pans and centrificals. Lime would not be necessary, and also the use of sugar bags would be eliminated. Fuel oil, another expensive item would be greatly reduced as this syrup can easily be manufactured in the present evaporating machinery on exhaust steam, up to a standard Beaume of thirty-nine, then sent to storage in tanks and thence shipment in tank cars to the central distillery would be an easy matter. No particular care need be necessary in the manufacture of this syrup, as a little inversion would be advantageous.

The industrial alcohol business is in very good shape today, and there is no reason why the Louisiana planter should continue producing a money-losing product when he can produce a money-making product at one-half the cost of production of sugar. The yield of industrial alcohol from a rich cane syrup would be from 15 to 20 gallons to the ton of cane, depending upon the efficiency of the manufacture.

There naturally will be lots of opposition towards this alcohol plant from those interested in the manufacture of sugar, such as sugar brokers, the alcohol trust, and sugar machinery manufacturers. But it is to be remembered, that in case of a good sugar price year, the sugar planter can go ahead and produce sugar. From the writer's ten seasons' experience in Louisiana factories, the greatest crisis of the sugar industry in Louisiana is now at hand, and there is only one way to meet it, by intelligent preparedness.

S. M. OPPENHEIM,
206 Title Guarantee Bldg., New Orleans, La.
July 21, 1926.

National Soy Bean Convention

Mr. W. E. Ayres, Assistant Director in charge of the Delta Branch Experiment Station,, Stoneville, Miss., announces that the National Soy Bean Convention will be held at Stoneville, Miss., August 9th to 12th. This should be a very interesting gathering at which our Louisiana farmers may come in contact with soy bean farmers and experts from widely distributed sections. It is said that there will probably be more than thirty states represented. Any members of the American Sugar Cane League who are desirous of rubbing noses with professional soy-beaners and imbibing first hand information from them will have ample opportunity to do so on this occasion.

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THE SUGAR BULLETIN

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We stand for the encouragement of Home Industries as against Foreign Competition.

Vol. 5 NEW ORLEANS, LA., AUGUST 15, 1926. No. 21

The Fork in the Road

We are now at the middle of August and the initial stage of the 1927 cane crop—breaking up the land—is demanding attention. In a word, the time has come to decide whether there is to be a 1927 cane crop. For some who have been engaged in cane growing in Louisiana all their lives, and who look back upon several generations of ancestors who were engaged likewise, this is an undecided question as we write these lines.

No particular section of the Louisiana sugar district has any monopoly of the membership in this perplexed and irresolute battalion. They recruit singly or in wavering groups from all the Parishes. They converse with each other anxiously. They commune with themselves. They hold silent sessions with the departed spirits who wrung fortunes in sugar from Louisiana's soil. There are conferences at which Policy and Sentiment and Necessity and Tradition all rise up and speak.

* * * * * * * *

They need a leader as much as did the Children of Israel in the Wilderness. They have beaten the bulrushes at Baton Rouge in an eager search for Moses, but Moses is missing.

* * * * * * * *

These men have to choose between two things. They have to decide whether they will discontinue planting sugar cane or whether they will continue to plant it but adopt new varieties. The third alternative, the continuation of the cultivation of the old varieties, has been eliminated from the minds of most of them, for they have been led to their present mental misery by the failure of the old varieties to produce a crop in recent years. Brought down to its last analysis, therefore, their indecision rests on either a lack of faith in the new varieties or their financial inability to secure planting material of such type.

In the latter contingency no editorial in the SUGAR BULLETIN can materially help their case. Agencies other than the Press, as modestly represented by this little publication, must be appealed to. But if their final policy is going to be based on their confidence—or lack of it—in P.O.J. 234, P.O.J. 36, P.O.J. 213 and Cayana we recommend, as a

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reasonable step in their deliberations, that they take a look at those canes before they spike their guns.

P.O.J. 234, P.O.J. 36, P.O.J. 213 and Cayana may be seen at Southdown in the massive agricultural phalanxes typical of a big plantation. The spectacle recalls the era when cane was cane in Louisiana. One may stand up in a wagon and look over hundreds of acres of unblemished verdure as thick as grass and as uniform and unspotted as the cloth on a billiard table. There is good reason for going out of cane, even if nothing presents itself as a substitute, if cane will no longer grow on Louisiana soil, but if cane of certain kinds will grow as luxuriantly, as vigorously and as splendidly as ever cane did for Etienne de Bore, or Valcour Aime, or Doctor W. C. Stubbs or Duncan F. Kenner, why quit?

We throw out the suggestion that those who think of giving up cane culture visit Southdown first merely as a sort of logical and obvious and common-sense procedure. History is full of would-be suicides who were saved from self destruction by some timely episode of one sort or another.

Snails, Borers and Centipedes

The following letter written by Mr. C. D. Kemper of Sterling Sugars, Inc., to Dr. W. E. Hinds of the Louisiana Experiment Station is interesting:

Franklin, La., August 6, 1926.

Dr. W. E. Hinds,
c/o Experimental Station,
Louisiana State University,
Baton Rouge, La.

My dear Dr. Hinds:

I wish to express my appreciation of the very earnest work that you and Dr. Spencer and Mr. Osterberger have done here at Sterling in making investigations of our cane root rot. I wish to recite the results of our investigations of yesterday afternoon, as follows:

We examined the roots on a number of plots where stubble cane was apparently suffering. In nearly every instance we found the roots perforated and we found mycelium present. The perforation of the roots were small round holes and other abrasions. The most marked manifestations were the small holes.

We found the land infested with small white centipedes. We found two large yellow centipedes.

We found snails on practically every system of root that we examined, although sometimes as few as one or two snails, and in one instance as many as twelve. Because of the fact that snails, unlike centipedes, are dark gray, and lie dormant, it is much more difficult to find them.

In two places in the field we found a species of ant which was not the Argentine ant.

In all of the previous investigations made by us, we have never believed that the centipede was responsible for the small round holes so frequently found in the roots of the cane. We know that snails drill small holes in normal cane roots when they are placed in bottles along with these roots. It would be interesting to try centipedes on normal cane roots and obtain the results.

As mycelium seems to be present in all cases where roots have been damaged by soil animals, it would be interesting to study this situation, with a view to ascertaining whether mycelium forms because of the injury done to the roots by soil animals, whether snails or centipedes.

We should endeavor to determine whether the proper rotation of sugar lands would, in a measure, reduce root rot.

If snails and centipedes prefer the roots of cane and corn to the roots of soya beans and cotton, we

might be justified in recommending rotation of soya beans and cotton.

In the investigation of the cane borer situation, we found rather heavy infestation in one place in the field. We found several specimens of borer eggs that have not been parasitised and one specimen that had been parasitised. We found innumerable small borers in the bud of the cane. At your suggestion we wired New York for 300 pounds of Sodium Fluosilicate to be applied under the direction of one of your men to the borer infested cane where accurate counts will be made so as to determine the effectiveness of this type of poison.

In addition to this test of poisoning cane borers, you have proposed trying sulphur on the pile of cane trash which contains voluntary growth cane back of the Sterling factory, so as to determine the effectiveness of this poison on snails. It is of interest to note that snails apparently occur in this cane trash in numbers much in excess of those found in the fields. I say apparently for the reason that it may be easier to locate the snails in cane trash than in heavy wet soil.

Assuring you that we will co-operate with you through our Mr. Badeaux, in any experiments which you wish to make on our Sterling properties, we beg to remain

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C. D. KEMPER,
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Bulletin No. 195

The Louisiana Experiment Station has just issued a Bulletin entitled "The Selection of Seed Cane". This Bulletin is by Doctors C. W. Edgerton, W. G. Taggart and E. C. Tims, and as it is on a subject connected with the agricultural side of the sugar industry, it reduces, to the extent of one Bulletin, the heavy arrears in this regard that we referred to editorially in our last issue.

The Bulletin, which is known as No. 195, and which can be had from the Louisiana Experiment Station on request, brings out strongly the advantage of selecting good cane for seed, and deprecates the practice followed so long in Louisiana of planting the worst and scrappiest and most sickly looking stubble instead of selecting the best possible canes for the reproductive process. The authors of the Bulletin believe that not only will seed selection bring about better and heavier cane crops in a general sense, but that the careful selection of seed cane showing less than the average evidence of mosaic and root rot will gradually result in a marked reduction in the ravages of these diseases. Experiments conducted ever since the year 1920 are cited as confirming this and figures are given showing the greater tonnages obtained from carefully selected seed as compared with those obtained from seed of only the average quality. Particular stress is laid by Messrs. Edgerton, Taggart and Tims on the headway against mosaic that can be made by always selecting for planting the canes on the plantation that show the least mosaic infection.

Tables of results are given in the Bulletin and reference is made to the fact that the results of three years' work along this line in 1920, 1921 and 1922, at Audubon Park, were publishd in 1924 in the Journal of Agricultural Research. It seems to us that these results, if considered worthy of publication, as evidently they were, should have been published by the Experiment Station in Bulletin form for the information of the Louisiana sugar planters. The Journal of Agricultural Research is a highly scientific Journal, published in Washington, D. C. It has a subscription price attached to it of $4.00 a year. Certainly few Louisiana sugar planters ever see it and the publication of the results of the Audubon Park seed selection work in a medium that the planters do not get, and would have to pay for if they did, is open, we think, to criticism. It may be however, that the Journal of Agricultural Research supplied the Louisiana Experiment Station with a sufficient number of reprints of the article for them to place one in the hands of every local cane grower. If so, our criticism is withdrawn.

We congratulate the Louisiana Experiment Station on Bulletin No. 195. The sugar planters of the State will undoubtedly be influenced by it to give more attention to the importance of using good cane for seed instead of the worst cane they have. That various diseases can be retarded and held partially in abeyance by always using for seed the canes on the plantation showing the least of such infections is also an important, helpful and valuable contribution to local knowledge. It is possible that, at this late day, we have mosaic so universally prevalent that we are almost too deeply bogged, and the hill is almost too long and steep, for us to scale it successfully by seed selection alone.

Quicker and more heroic means, such as the junking of all the old and disease-infested cane and the substitution of new and hardier and healthier varieties, may now be the only salvation. But no matter what cane we have, the practice of using the worst of it for seed ought to be eliminated and if Bulletin No. 195 contributes to this end, as we are sure it will, the work of its three authors over a period of six years will have fully justified itself.

Alcohol and Edible Syrup

Editor Sugar Bulletin:

In the last issue of the SUGAR BULLETIN, there was a letter published from Mr. S. M. Oppenheim, entitled "A Plan to Make the Louisiana Sugar Industry Freeze Proof", in which the writer suggests the possibilities of obtaining greater profits from making syrup in sugar factories and shipping the output to a central distilling plant, owned by the planters, where the syrup is made into alcohol. The idea is a novel one and based upon an experiment conducted by Mr. Oppenheim last March, where several fields of frozen cane were cut and hauled to a nearby sugar house and ground, the bagasse being sold to the Celotex Company and the heavy syrup sent to the distiller and made into alcohol. While this was a clever way of clearing the field of a worthless product, it is difficult to see how it would be advantageous when applied to sound cane and during the regular grinding season. It is to be regretted that Mr. Oppenheim did not furnish the data upon which he based his conclusions, as the calculations made by the writer indicate that the plan, excellent for use when the cane is badly frozen and worthless for sugar making, would result in a financial loss if tried out on sound cane. This is due to the fact that Cuban blackstrap molasses is at the present time abundant and cheap, so that Louisiana syrups must sell on their intrinsic merits as a food product, if there is to be any profit made in their production. This fact will be brought out in the following calculations.

The value of any sugar cane product to the distillery is based upon the combined weight of the Sucrose and Glucose present, which is known as the Total Sugar. Cuban blackstrap molasses contains about six pounds of the Total Sugar per gallon and Louisiana syrups 7.5 pounds. If the Cuban blackstrap molasses sells for 6 cents per gallon at the distillery, the value of one pound of Total Sugar will be one cent, and the proportional value of Louisiana syrup will be 7.5 cents per gallon. Of course such a price is absurd. But if the planters owned the distillery, then the syrup would be sent there and be made into alcohol, one gallon of syrup producing .8 gallon of alcohol, which at the present time sells for about 30 cents so that the income from each gallon sent to the distillery would be worth $.24 or less than the price of a poor grade of syrup. But in addition to the cost of the cane, and the cost of operating the sugar house, the planter would have to pay the expenses of operating the distillery and of selling the finished product. Unless Mr. Oppenheim can assure the planters a better price for their alcohol than 30 cents per gallon, there cannot be, from a superficial survey, any advantage gained by the proposed change.

But Mr. Oppenheim is right in his statement that sugar manufacture "should be eliminated entirely". Louisiana is not suited to sugar manufacture because the cane grown here is lower in sucrose content than in the tropics. But this very fact makes it especially adapted to syrup manufacture. A STANDARDIZED grade of syrup, made in all the sugar houses of the State, and distributed under one brand direct to the millions of housewives in all parts of the United States, is the writer's solution of the present acute financial problem facing the sugar planters at this time. Standardizing Louisiana syrups by which the same grade is made in all

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factories, is such a simple matter and so easily accomplished, that it seems incredible it has never been tried out before. If every owner of a syrup factory will insist that his syrup maker clarify the raw juice in such a manner that all mechanical impurities will be removed and yet none of the glucose destroyed by lime, they will find that they have produced a syrup, yellow in color and with a delightful flavor, and when samples from all the plants are compared, it will be found that they are all practically alike in flavor and color. The secret of making uniform syrup grades in Louisiana is to maintain all of the glucose in the juice, **intact through the entire process.**

The explanation of this is quite simple; glucose is an organic substance, white in color and sweet to the taste, a big asset to the syrup maker in its original form. Nature provides protectors for the glucose in the raw juice in the form of weak organic acids because glucose is very sensitive to the action of any alkalies. But during the clarification these protectors of glucose are removed, and the glucose left exposed to the action of the lime. The result is disastrous to the color and flavor, the substances formed by the combination of lime and glucose being dark in color and with a bitter taste. These decomposition products are soluble and so go through the entire process of manufacture and cause the final products to possess an unattractive color and a bitter taste, better known to the sugar planters as the "tang".

This explains why no two syrup houses can make syrup uniform in color and flavor. If in one house one-half of a pound of glucose is decomposed, and in another one a full pound, the latter will have a darker color and more of a "tang" taste. Since the operator has no control over the **amount** of glucose destroyed, there can never be any process developed by which uniform grades can be made except when **no glucose is destroyed at all.** This will be the common ground for all syrup factories. The syrup now placed on the market is irregular in quality and largely purchased by the "blenders" who mix the different grades together and thus produce a brand, which is the **average,** but it is evident that such a mixture will be vastly inferior to the standardized grade made by each sugar planter in his syrup house, which possess all of the attractive qualities of the best syrup. The blended syrup is now sold to the customers through the grocery stores at high prices, but if a better grade was placed on the market in direct competition, and sold for a less price, Louisiana could not fill the demand developed. The Louisiana planters should then specialize in the manufacture of standardized syrups, rather than continue in the manufacture of sugar or as Mr. Oppenheim suggests, in the manufacture of alcohol. First clarify juices **correctly** without destroying the glucose, turn out a standard syrup and then develop a market for the superior article in all sections of the United States by selling direct to the homes, rather than the usual distributors, and the Louisiana planters will again regain their former prosperity.

IRVING H. MORSE,
August 7, 1926. 2806 State Street.
New Orleans.

EDITOR SUGAR BULLETIN:

In the previous issue of this Bulletin Mr. S. M. Oppenheim proposed to render the Louisiana cane industry immune against the disastrous effects of freezes, by manufacturing from the cane, instead of sugar, a syrup, to be turned into alcohol at a sugar manufacturers' co-operative distillery. This is based on the true enough fact, that cane damaged by a freeze and unfit for sugar-making may still be fit for making alcohol, Mr. Oppenheim concedes the idea to be revolutionary. But should not we better call it fantastic?

We shall not dwell on the psychological side of the question, which is so inhibitory to all such co-operation plans, as to give them a decidedly Utopian aspect. Technically, this scheme could only partially circumvent the dire consequences of freezes. It is hardly necessary in this, the age of homebrewing, to recall that it is the sugars both sucrose and reducing sugars—contained in syrup or molasses, which are transformed into alcohol by the process of fermentation. Mr. Oppenheim assumes naturally that the frozen cane will have to be left standing in the field for a certain length of time, as otherwise the freeze would evidently not affect in the least sugar making operations. Now, when frozen cane is left standing it deteriorates with accelerated rapidity. But this deterioration is not limited to the inversion of sucrose, which impairs the sugar making qualities of the cane. This inversion is only a transitory step towards the total destruction of the sugars. Dr. Stubbs in one of his experiments, related that a cane, which had been left standing for only thirteen days after the end of the freeze had lost fully 25% of its total sugars. So that particularly under unfavorable circumstances, the cane grower harvesting frozen cane is apt to find his cane little more than some very evil smelling vinegar. Such was the case observed by this writer in a cane field, about mid-January, 1919. Thus a freeze may cause a partial or even total loss of cane as well for alcohol as for sugar making purposes.

Economically the plan is an absolute impossibility. We only have to consider the following figures, based on present market quotations:

The southern distiller uses for raw material blackstrap molasses. Mostly he obtains these directly from the tropics for as low as 3 or 4 cents a gallon. Even Louisiana blackstrap sells at present for 4.5 cents a gallon on the plantation, allowing 1.5 cents freight on an average distance, this puts the gallon at 6 cents. A gallon of blackstrap contains not less than six pounds total, fermentable sugars. Thus the molasses-distiller pays for his sugar 0.5 to 1 cent per pound. With a mill extraction of 75%, a normal juice of 14.7 brix, 75 purity and 10 glucose ratio, and a loss in manufacture of 1%, (thus in good average conditions) we obtain from one ton of cane exactly 180 pounds of total sugars, in the shape of syrup, for which the co-operative or syrup distiller would have to pay:

Cost of one ton of cane	$4.00
Cost of manufacturing the syrup	.70
Freight for an average distance	.40
Total	$5.10

This places the pound of sugar at 2.83 cents. Right here we see already that the syrup distiller would not have a ghost of a chance in competition with the molasses distiller. And a competitive war would be as sure as death or taxes.

But more. It takes an efficient distillery some 16 pounds of sugar to make one gallon of commercial alcohol (95%). These 16 pounds cost the molasses distillers 8 to 16 cents, while the syrup distiller would have to pay 45 cents for his raw material alone, and the gallon of commercial alcohol sells at present well below 40 cents.

Further commentaries are evidently superfluous.

A. C. SNYERS.

Root Disease Of Sugar Cane In Louisiana

By R. D. RANDS,
Pathologist, Office of Sugar-Plant Investigations, Bureau of Plant Industry.

(Continued from Issue of July 15th)

One experiment with spring-planted cane may be cited. The common soil fumigant paradichlorobenzene was used. It was observed that, where this substance was applied to the sprouting can (the D-74 variety from windrowed stubble) at a rate strong enough to kill the animals but without chemical injury to the roots, root-rotting was rare. This was true in all cases for this particular treatment (one-half ounce per linear yard), which was replicated six times in short rows well distributed over an acre block of heavy black soil known to have produced a severely diseased crop of stubble cane last year. The checks, or untreated rows, on the other hand, were

usually severely affected. These were always directly adjacent to the treated rows and were similarly distributed and replicated to counterbalance variations in soil moisture, rate and depth of planting, etc. The roots in these control rows showed extensive reddish brown or black areas and were often entirely rotted. They had also been much pitted and stunted by the soil animals. The difference in appearance between the treated and untreated plants was therefore very striking; the long, clean, white roots of the fumigated rows, never having been observed before on such soils in Louisiana, reminded one of greenhouse-grown cane.

If the rotting organisms present in this Louisiana field were not dependent upon animal injuries for entrance into the root tissues, one would expect similar decay of the roots in the fumigated rows, unless the fumigant had also a deleterious effect on this form of life. That at least some of these vegetable organisms were not affected was indicated by the fact that species of Marasmius, Sclerotium, and Fusarium were found growing luxuriantly in one row on dead leaf sheaths and other cane detritus clinging to or near the sprouting seed in soil which had a pronounced odor of the fumigant.

The difference between the treated and the untreated rows was further illustrated by the relative stands obtained. Thirty-seven days after planting, there were six times as many plants in the fumigated rows as in the controls, which ratio, however, after two months with intervening rains, was reduced to 3.5 to 1 on account of further germinations in the controls.

The conditions surrounding this experiment were very abnormal, because of the poor physical condition of the seed bed, poor quality of seed, lateness of planting, and the entire absence of rain for 39 days after the cane was planted. The seed, however, was put in deep where there was generally enough moisture for germination, but the chemical placed 2 inches above in loose dry dirt was entirely dissipated in less than a month, allowing reoccupation of the fumigated strip by the root-eating animals. Root injury and rotting then became prevalent in the treated rows; and the earlier vigor of these plants, compared with the controls and adjacent fall-planted cane, largely disappeared. Thus, the only noticeable difference after three months was that of stand. This experiment and others even less decisive are not comparable with what might occur during a normal spring, but the results are sufficiently indicative to warrant more extensive tests, which are now being carried out.

RECOMMENDATIONS

Adoption of Tolerant Varieties

One recommendation can be definitely made, and that is to adopt more vigorous disease-resisting varieties of cane.

D-74 and the so-called native canes have been satisfactory in the past and still give fair yields; but this is true only under the most nearly ideal weather conditions for cane growth. Because of their susceptibility to diseases and their comparatively weak root systems with low recuperative and foraging ability, they are apparently no longer able to withstand the changed conditions of soil and the variations of climate to which they are of necessity exposed.

The Java seedling, P.O.J. 234, distributed by the United States Department of Agriculture and the American Sugar Cane League in the fall of 1924, although sometimes severely attacked by the root-eating animals, generally puts forth new roots fast enough to withstand its injuries, largely because of its great natural vigor (inherited from its slender, more grass-like ancestor Chunee). It is by no means an ideal cane, but its earliness, heavy stooling, and ratooning qualities appear to be sufficiently superior to the common varieties, even on the heavier soils, to commend it to the earnest attention of every sugar-cane grower.

Commercial plantings of this variety by the managers of the Southdown plantation have demonstrated among other things, that only three-fourths to 1 ton of seed per acre need be planted to obtain a stand on light soil. However, on heavy soils this quantity should be increased by at least a half-ton, to offset losses from disease through possible unfavorable seasonal conditions. Contrasted with the old varieties, this represents an estimated saving of at least $15 per acre. Therefore, it is evident that a much higher proportion of the sound eyes of this P.O.J. 234 cane succeed in producing plants, due probably to its greater resistance to red rot, root disease, mosaic, and other deteriorating influences. For these reasons it is admissible to cut the seed into 16 to 18-inch lengths, which also guarantees more uniform germination through elimination of the temporary growth suppression of the eyes in the middle of the stalk operating in case of full-stalk plantings.

Since, among several superior types, P.O.J. 234 is the only one of which a large seed stock will soon be available, its general adoption by the industry, pending the distribution of still better varieties, is recommended. Several apparently more promising canes, such as P.O.J. 36, 213, 228, 979, and 2714 and 36M, are now being tested and increased as rapidly as possible by Federal, State, and private agencies. Comparisons of duplicate plantings of these varieties, along with a large series of selected United States seedlings on typical light and heavy lands at the Houma field station, illustrate the necessity of developing varieties adapted to the various soil types. On account of the almost invariable occurrence of root disease in the heavy black lands, only those types possessing exceptional vigor and tolerance of mosaic may be expected to yield a series of profitable ratoon crops. Observations during the present season indicate the superiority in these respects of varieties of the Chinese type, such as Kavangire, Merthi, and Cayana-10, and particularly seedlings of Kassoer parentage. Even the massive P.O.J. 2714, which contains only one-quarter Kassoer blood, showed in 1925, in spite of the unfavorable spring, remarkable development in the heavy soil of the experimental plats.

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THE SUGAR BULLETIN

Entered as second class matter April 13, 1925, at the postoffice at New Orleans, La., under the Act of March 3, 1879.

We stand for the encouragement of Home Industries as against Foreign Competition.

Vol. 5 NEW ORLEANS, LA., SEPTEMBER 1, 1926. No. ~~22~~ 23

Mr. Arthur H. Rosenfeld Employed to Assist the Louisiana Sugar Industry

The American Sugar Cane League has entered into a five-year contract with Mr. Arthur H. Rosenfeld, internationally known as a sugar technician of the highest rank, especially along agricultural lines, under the terms of which Mr. Rosenfeld is employed for five years, beginning August 15, 1926, to assist the sugar industry of Louisiana in its effort to successfully solve the problems with which it is confronted.

Mr. Rosenfeld has rendered similar services, with remarkable success, both in Argentina and Porto Rico. He is a man of exceedingly high repute, very wide experience, strong personality and unusual mental caliber. He will come to Louisiana with the thorough conviction that our difficulties are surmountable and it will be his purpose and his ambition to demonstrate that the Louisiana sugar industry can be made to prosper not merely theoretically but from a practical dollars and cents point of view. His employment reflects the wishes of the banks, railroads and other large interests identified directly and indirectly with the Louisiana sugar industry and these interests are contributing substantially to the expense involved in his employment.

The contract that has been made with Mr. Rosenfeld is significant of the spirit that now animates the sugar industry of this state and which we believe the American Sugar Cane League has been largely instrumental in creating. To quote John Paul Jones, "We have just begun to fight".

THE
SUGAR BULLETIN

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The American Cane Growers' Assn.
The Producers & Mfgrs. Protective Assn.
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Reginald Dykers, General Manager & Editor of the Bulletin, 301 Nola Bldg., New Orleans.

Wm. H. Chaffe, Secretary, 301 Nola Bldg., New Orleans.

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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Friendly Federal Financiers

About the middle of August the American Sugar Cane League intervened, by invitation, in a situation that appeared to gravely affect the welfare of the Louisiana sugar district as a whole. In brief, the time is approaching when action must be taken in connection with the fall planting of cane, and while there exists a widespread desire to use cane of the new varieties for this purpose the wish to do so is frustrated by the financial inability of many planters to acquire it. This does not imply that the new varieties are any more expensive than the old varieties, for they are not. The cane necessary to plant an acre in P.O.J. 234 costs no more than the cane necessary to plant an acre in D-74 or Louisiana purple and striped. But the serious fact developed that very many planters have all of their cane pledged to secure loans and are under obligations to sell or grind all of it and apply the proceeds to these loans. These planters are thus confronted with a complete lack of seed cane of any description.

The League undertook to do what it could to help this situation, and carried on telegraphic correspondence with Senator Ransdell, who happened to be in Washington on business connected with the New Orleans grain traffic problem. A conference was also held with Congressman W. P. Martin, at Thibodaux and he likewise sent telegrams to Senator Ransdell.

The following telegrams were exchanged:

New Orleans, La., August 11, 1926.
SENATOR JOS. E. RANSDELL,
U. S. Senate,
Washington, D. C.:

Many Louisiana sugar cane farmers now financed by Federal Intermediate Credit Bank, and many additional ones desiring to use that source of credit for coming year, are most anxious for Federal Farm Loan Board to make thorough and personal investigation of the situation here which involves the essential item of the early acquisition of seed cane for the next crop. Federal Bureau of Sugar Plant Investigations will inform you of the brilliant prospect for complete resuscitation of local sugar cane industry through adoption of cane varieties released by them and now obtainable by farmers here if they are enabled by Farm Loan Board to purchase this cane for seed. We feel convinced the time is a crucial one for this industry and splendid achievements of Federal Plant Bureau should not be nullified by any lack of realization of the facts by Federal Farm Loan Board. May we ask you to do what you can in this emergency and thus add to the noteworthy services you have already rendered to our sugar industry?

AMERICAN SUGAR CANE LEAGUE,
Reginald Dykers,
Fifth Vice-President and General Manager.

Houma, La., August 11, 1926.
SENATOR JOSEPH E. RANSDELL,
Washington, D. C.:

I join with the American Sugar Cane League in the request that you urge members of the Federal Farm Loan Board make a personal investigation of the sugar cane industry of Louisiana. No one can appreciate the seriousness of the situation without a personal view of the situation. Without co-operation of the Farm Loan Board the industry is doomed, the only hope being in growing of new varieties of cane as recommended by Sugar Plant Bureau of Agriculture Department.

W. P. MARTIN.

Washington, D. C., August 12, 1926.
REGINALD DYKERS,
General Manager American Sugar Cane League,
New Orleans, La.:

Answering telegrams yourself and Congressman Martin, have conferred with Governor Cooper, head of Farm Loan Board, who hopes to visit Louisiana in person. Also conferred with Brandes of Sugar Plant Investigations, who will give every assistance. Governor Cooper asks how soon his presence is needed and states that his New Orleans associates will do everything possible to assist. Please confer with these officials and wire me in detail what you can depend upon from them and how soon desired investigation by officials from here must be made.

JOSEPH E. RANSDELL.

New Orleans, La., August 12, 1926.
SENATOR JOSEPH E. RANSDELL,
U. S. Senate,
Washington, D. C.:

Thanks for your telegrapm. Expect to be able to wire you in detail Saturday or at the latest Monday, giving the definite and specific information you request. Impossible to bring about necessary conferences before Saturday morning.

REGINALD DYKERS,
Fifth Vice-President and General Manager.

New Orleans, La., August 14, 1926.

SENATOR JOSEPH E. RANSDELL,
U. S. Senate,
Washington, D. C.:

Local Farm Loan officials declare inability to do anything now towards financing next crop and purchase of seed cane for fall planting comes in that category. Their attitude is sympathetic and they will welcome any helpful act from Washington. Situation appears to be complicated by unsatisfactory relations between Federal Intermediate Credit Bank and an existing Agricultural Credit Association. We are informed by planters that ample new machinery can be immediately set up to to meet all federal requirements. This League, representing entire sugar industry, intervenes to ask with all the earnestness in its power that somebody possessing necessary vision and authority be sent here immediately to devise ways and means to enable farmers impoverished by diseased cane to grasp the relief in shape of new canes offered them through Federal Plant Bureau.

AMERICAN SUGAR CANE LEAGUE,
Reginald Dykers,
Fifth Vice-President and General Manager.

Washington, D. C., August 16, 1926.

REGINALD DYKERS,
Fifth Vice-President and General Manager,
American Sugar Cane League,
New Orleans, La.:

Further conference with Governor Cooper today. He promises positively to send Mr. Thomas this week with full authority and to go himself if possible. He speaks very favorably and thinks there will be no trouble if proper machinery created as suggested your last telegram.

JOSEPH E. RANSDELL.

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Dr. William S. Myers, Director
401 Hibernia Bank Building New Orleans, La.

Washington, D. C., August 20, 1926.

REGINALD DYKERS,
Vice-President and General Manager,
American Sugar Cane League,
301 Nola Building, New Orleans, La.:

In conference with Governor Cooper this morning he says he and Mr. Thomas are leaving for New Orleans tomorrow night. He suggests you confer with President Davis of Farm Land Bank and be prepared for prompt action. The Governor assures me he intends to do everything possible.

JOSEPH E. RANSDELL.

Governor Cooper, president of the Federal Farm Loan Board, and Mr. Thomas, of the Board, as soon as they were fully informed by Senator Ransdell of the desire for their presence here, expressed their perfect willingness and, in fact, hearty desire to come and do all they could for the Louisiana cane growers, and they arrived in New Orleans on the morning of August 23. They spent the day in conference with Mr. T. F. Davis, president of the Federal Intermediate Credit Bank of New Orleans, and they received a delegation of sugar planters at the office of the Federal Intermediate Credit Bank in the afternoon. On August 24 Governor Cooper and Mr. Thomas went out into the sugar district to get a personal view of the cane crop. They returned to New Orleans on the evening of August 24 and were the guests of Mr. C. F. Dahlberg at a dinner at the Hotel Roosevelt. At this dinner there were present, besides Governor R. A. Cooper and Mr. G. H. Thomas, Mr. Pool of the Marine Bank & Trust Co., Mr. Claiborne of the Whitney-Central National Bank, Mr. Kepper of the Hibernia Bank & Trust Co., Mr. Rives of the Canal Bank & Trust Co., Mr. Vincent of New Orleans Bank & Trust Co., Mr. Thorn of the Interstate Trust & Banking Co., and a number of planters and several officials of the Federal Intermediate Credit Bank, including Mr. Davis, the president. In fact, the dinner was arranged by Mr. Dahlberg to bring about a conference between Governor Cooper, Mr. Thomas and the officers of the New Orleans banks.

Governor Cooper, at the invitation of Mr. Dahlberg, made a statement concerning the functions and the limitations of the Federal Farm Loan Board. He made it clear that the Federal Intermediate Credit Banks, of which there are twelve in the United States, were not established to handle loans that it is legitimate and customary for the commercial banks to handle. He explained that it was the function of the Intermediate Credit Banks to step in and give assistance only in cases where the commercial banks would not be in a position in the course of the ordinary business policy of a commercial bank to handle the credits. He likewise made it clear, however, that while the Federal Intermediate Credit Banks are prepared to offer many facilities not possible in the case of the commercial banks, they had to have absolute security for their loans. It was in connection with this matter of security for the federal loans that the necessity for a conference with the local bankers arose. Governor Cooper then went on to say that he had received a great deal of valuable information concerning the sugar cane situation in Louisiana from the officials of the U. S. Department of Agriculture at Washington, and that they had told him that they were confident Louisiana's cane crop troubles could be completely done away with

by the simple expedient of adopting new varieties of cane to replace the old and diseased varieties. He said he had visited during the day some of the plantations and had returned to New Orleans convinced from what he had seen that the experts of the U. S. Department of Agriculture are correct. He stated that it was evident to him that the present moment was a crucial one and that facilities must be afforded the planters to secure seed of the new varieties if the industry of the state was to be restored to prosperity. He wished, therefore, to arrive at some understanding by which the very reasonable requirements of the Federal Intermediate Credit Bank in the way of security might be met, so that the unlimited money of that institution might be made available to planters for the purchase and planting this fall of seed cane of the new varieties. Governor Cooper's address was followed by short talks by Mr. Pool, Mr. Claiborne and Mr. Munson. Then the gathering got down to business and there was a conference around the table until a late hour, the whole atmosphere of which was co-operative and confident, and encouraging to the Louisiana sugar industry. The legal machinery necessary in order that the Federal Farm Loan Board might function was discussed in detail and at the conclusion of the conference it was felt by everybody who attended it that the New Orleans banks would participate in the erection of this machinery in a way that would insure the fulfillment of all the requirements of the Federal Farm Loan Board. The League feels that there is considerable cause for congratulation on the progress of this important matter up to now, and we believe the next thirty days will see every detail perfected and the money available.

The Storm

On August 25th a considerable portion of the Louisiana sugar district was visited by a tropical hurricane. Such disturbances have appeared at intervals here since time immemorial and hence must be considered as a factor in our crop problem. The most recent one was highly damaging to the sugar factories and other plantation buildings in the area visited, as well as to crops. It is some features of the latter phase that we will discuss in this article.

The fact that such storms will inevitably occur at intervals makes it desirable that the varieties of cane grown in Louisiana belong if possible to types that are able to withstand these visitations without serious injury. Such has never been the case with the cane know as D-74, which was widely condemned when first introduced here because of the ease with which it broke off under wind pressure. To this shortcoming it has now, as we all know, added a whole galaxy of others.

Realizing the importance and interest attached to the behavior during the storm of the new varieties of cane now being introduced in Louisiana, the Editor of THE SUGAR BULLETIN visited Southdown Plantation on August 28th, three days after the hurricane, for the purpose of inspecting the condition of the D-74, the Louisiana purple and striped cane, P.O.J. 36, P.O.J. 213, P.O.J. 234 and Cayana. From this inspection the following facts were ascertained:

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The injury to D-74 is immeasurably greater than to any of the other canes. The fields of D-74 present a spectacle of devastation and wreckage, due to the tendency of this cane to snap off under wind pressure. So far as damage is concerned the D-74 cane is in a class by itself. If we place the damage to D-74 at 30% in the heart of the storm area, which is merely an assumed figure, for the actual damage may be somewhat more or somewhat less than that, then the damage to P.O.J. 36, the variety that, next to D-74, suffered the most, is not more than 4% to 6%. P.O.J. 36 is a strong, hard, sturdy cane not easily blown down, and its tendency to stand up led to some breakage, but its tough, fibrous nature reduced this breakage to a small percentage. After P.OJ. 36 in point of damage come P.O.J. 213 and the Louisiana purple and striped, both of which went down on the ground and are broken to only a negligible extent. We now come to P.O.J. 234, in which, because of the discussion revolving around its introduction here, and because of the comparatively large quantity of it available this year for planting, we are all particularly interested.

One of the criticisms leveled at this cane is based on its tendency to lodge—its predilection to fall down on slight provocation. This attribute proved its salvation during the hurricane. It went down flat on the ground at the first good puff of wind, and thereafter the tempest swept harmlessly over it. If it acts now like all other sugar cane a few days of sunshine will see it rising from its prostrate position virtually unharmed, except that it will be crooked.

The hero of the storm, all things considered, is the cane known as Cayana. This variety neither bent nor broke nor bowed its head. Its foliage is in shreds but otherwise it is uninjured. It is evidently the Mickey (himself) McGuire of our little cane community—the rough and tumble ragamuffin cane that came over the railroad tracks to us, from Georgia. Readers of the inimitable cartoons of Fontaine Fox will recognize the simile, which we think is apt. It is never sick, it thrives on our blackest, poorest soil, it reeks with vitality and can, will and did fight a tropical hurricane and whip it.

All in all the new varieties stood the storm test well, especially Cayana and P.O.J. 234, one because it was strong enough to stand up and fight; the other because it was discreet enough to lie down and pursue a sensible policy of non-resistance.

As for D-74, diseased and rootless, broken and bedraggled, pock-marked with mosaic and a target for all the ills of Job, the only thing now left for it to do is to hobble on its last and quavering legs to Baton Rouge and cuddle close to the Campus Campanile. To use another Fox simile, even Stinky Davis has a mother, and she loves him, too.

Cane Borer Control Progress

By Dr. W E. Hinds, Entomologist, and Dr. H. Spencer, Assistant Entomologist, Louisiana Experiment Station, Baton Rouge, La.

(This statement published by permission of the Director.)

During the course of our experiments with a new insecticide dust, known as sodium fluosilicate, we have secured thus far a very encouraging degree of control of the borers in several tests made on cane through the fall of 1925 and through a series of four such tests made on corn during the present season. We have dusted D-74 and D-95 cane repeatedly this summer with a series of several brands of this material, and there has been no serious burning or injury to the growth of the cane from as many as six applications made at weekly intervals to the same plants. Other varieties, including P. O. J's, have also been dusted without injury.

We have found that there is a very considerable difference between various brands of materials bearing the name "sodium fluosilicate" in their physical and chemical qualities, in their burning effect on corn, and in their killing effect on cane borer larvae of various sizes in corn. Therefore, from these various series of tests we propose to select what seems to be, on the average, the most satisfactory material found thus far and arrange, if we can, for the application of this to cane on a large plantation acreage basis so that the results may be as convincing as possible to sugar cane growers generally.

We give below a brief table showing typical records of results as obtained with "Jungman's sodium fluosilicate, extra light" in applications on separate plats of corn treated during July. Most of the borer infestation at Baton Rouge has been in corn thus far and we have not found sufficient borer infestation in cane to enable us to get the large number of borer larvae needed for such tests. Corn is much more susceptible to burning by such insecticides than is cane of any variety yet tested. Therefore, burning results can be compared more delicately and accurately by tests made on corn rather than on cane.

Series	Dusted Date	Exam.	No. Alive	No. Dead	% Kill	Remarks
VIII	7/ 6	7/ 9	57	12	66	Severe burning (to corn).
IXa	7/14	7/16	44	97	69	Little burning (to corn).
Xa	7/22	7/26-28	13	36	73	Some burn—Killed 5% pupae.
Xb	7/22	7/26-28	19	43	69.3	Moderate burn. Killed 9% pupae.
Average 4 tests— (Total Stages 421)			133	288	68.4%	

Tests VIII and Xa of undiluted material.
Tests IXa and Xb contain 10% hydrated lime.

Taking the general average percentage of kill of larvae of all sizes, as shown at 68.4% in this series of four tests, we think that the degree of control from one application is decidedly encouraging. Furthermore, a close study of the effect of some of these dusts upon borer larvae of various sizes shows that in an average of two series of this particular material there was a kill among first stage larvae of 38%; among second stage larvae of 88%; among third stage larvae of 65%; fourth stage, 60%; and fifth stage or full-grown larvae, 63%; and among pupae of about 7%. The high percentage of control among full-grown larvae (and even some among pupae) is very important.

We believe that these consistent results fully justify a large-scale field demonstration which may include, according to present plans:

1st—A general application, at what seems to be the most favorable time for borer control in the

third generation, on an area of probably from 500 to 800 acres.

2nd—A second application for third generation on 200 acres or more at about 7 to 10 days after the first.

3rd—An application for fourth generation on part of the area receiving two applications for the third and on part of the area receiving only the first application for the third.

4th—An application on 100 acres or more for fourth generation only.

5th—A test of the effect of varying poundage to show the differences in effectiveness between applications of 5, 10 (standard application probably 10 to 12 pounds per acre) and 20 pounds per acre.

During several weeks past examinations have been under way to find the most satisfactory possible location for this large-scale work. A location is now being decided upon and it is expected that the first extensive airplane dusting for cane-borer control will be made about September 1. Other applications will follow at later dates. Announcement regarding this location and the later applications especially will, we expect, be made through the public press so that cane growers desiring to see this work in actual operation may have opportunity to do so and thus become familiar with the methods employed in the dusting and in getting the results especially upon the cane plants, the cane-borer stages and the parasite balance occurring in the treated fields. Such airplane dusting operations begin usually at daybreak and are completed at a rate of more than 200 acres per hour.

Root Disease Of Sugar Cane In Louisiana

By R. D. Rands,
Pathologist, Office of Sugar-Plant Investigations, Bureau of Plant Industry.

(Continued from Last Issue)

DIRECT CONTROL OF ROOT PARASITES

Extensive experiments are now being carried on with the object of discovering and perfecting a practical method for control of the root-destroying snails and centipedes. Since even the most vigorous mosaic-immune varieties are sometimes seriously retarded in growth and reduced in stand before the plants become established, the importance of such investigations is realized. If the damage, which the writer's observations indicate is caused by these soil-inhabiting pests, can be prevented, not only greatly increased yields of more mature plant cane, but an increase in the number and productiveness of stubble crops should be obtained. The experiments involve tests of several possible methods of control, such as soil fumigation, the application of animal deterrents, poison baits, and special soil treatments. A preliminary experiment indicating promising possibilities from soil fumigation with paradichlorobenzene has already been described.

Inundation for several days of parts of fields in irrigation operations last summer apparently greatly reduced the number of both snails and centipedes. Several river farmers, who have for years alternated cane with flooded rice crops, maintain that their yields of cane are thereby greatly increased. However, examinations made in plant cane the second year after the land had been flooded, i. e., after an intervening crop of corn and cowpeas, showed that the pests had either not been completely eradicated or had been reintroduced; and in the succeeding stubble crop, root injury was nearly as bad as in adjacent fields under the ordinary rotation. These scattered observations are mentioned merely to encourage growers to be on the lookout for significant differences in the amount of root disease which may appear in their fields as a result of variations in cultivation or rotation practices.

SOIL IMPROVEMENT AND BETTER METHODS OF CULTIVATION

The extent and permanence of the prosperity which the substitution of more hardy varieties may bring will depend largely upon the handling of the fundamental soil problems which now exist in the older established sugar-cane areas of Louisiana. Root disease and humus-deficient and compacted soils are major problems in nearly every sugar cane country in the world. The plant breeder can not be expected to overcome all the defects of past agricultural practices. The large-barrel, high-sugar-yielding, long-ratooning variety so much desired by all must, of course, have a suitable soil in which to grow. The experience of several planters shows that the unfavorable physical condition of the heavy soils can be greatly improved by regularly turning under all of the cane trash. This practice can not be urged too strongly for all types of sugar-cane soils.

(To be Continued)

The 1925 Commerce Yearbook

Mr. R. L. Purdon, Sugar Specialist of the U. S. Department of Commerce, asks us to announce to the members of the American Sugar Cane League that copies of the "Commerce Year Book" for 1925 may now be obtained from any district or co-operative office of the Bureau of Foreign and Domestic Commerce. This useful book is bound in cloth, contains nearly 800 pages, with numerous charts, maps and tables. The material in it has been gathered from every available source and carefully digested by experts. The price is purely nominal, one dollar, and as the industrial interests of the country will quickly absorb the entire edition any of our members desiring a copy are advised to send one dollar without delay to Mr. R. L. Purdon, Foodstuffs Division, U. S. Department of Commerce, Washington, D. C.

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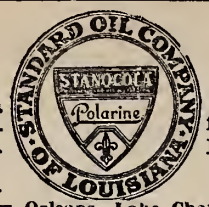

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THE
SUGAR BULLETIN

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We stand for the encouragement of Home Industries as against Foreign Competition.

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The Annual Meeting of the League

The current fiscal year of the American Sugar Cane League ends on Thursday, Sept. 30th, 1926, and on that date the annual meeting of the organization will be held at the office of the League, 407 Carondelet St., New Orleans, at 1:30 in the afternoon. Every member of the League is cordially urged to attend this meeting at which the President, Mr. Stephen C. Munson, will read his annual report outlining what has been accomplished by the American Sugar Cane League during the past twelve months, and there will also be reports submitted by some of the other officers covering their respective fields of responsibility.

At the annual meeting the election of a President, five Vice-Presidents and a Treasurer, to serve during the ensuing year, will be held, and as the actions and policy of the League for the year will necessarily rest in the hands of the officers and the members of the Executive Committee it is the duty of each member of the organization to attend the meeting and assist in the selection of the right men to fill these important posts.

* * * *

Since the League was formed, in September, 1922, it has been exceedingly fortunate in its administrative officials. Hon. Andrew H. Gay, Mr. Ernest A. Burguieres, and Mr. Stephen C. Munson, who have each served in turn as President of the organization, have each of them been active, conscientious and indefatigable workers for the welfare of the Louisiana sugar industry, and each one of them labored at great personal sacrifice to discharge honorably and effectively the duties of his office. Each one of these gentlemen has felt a deep sense of responsibility and each one of them has striven to discharge that responsibility to the completest extent.

* * * *

The Louisiana sugar industry at the present time is going through what is perhaps the most critical epoch of its existence, if we except the years immediately following the Civil War. At no time in its history has it been more necessary than now for the hands that hold the helm to be those of competent, courageous and capable men. The problems which will confront the new administration will be of great magnitude. In order to solve them the League's leaders will need every particle of co-operation and counsel from the members that it is possible to obtain. Above all, they ought to be made to feel that their selection for the responsible posts to which they are chosen represents a widespread expression of the wishes of the members of the organization.

The annual meeting should therefore be largely attended and the officers and members of the Executive Committee should be named as a reflection of the wishes and preferences of the whole membership of the organization.

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407 Carondelet St., New Orleans

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The Producers & Mfgrs. Protective Assn.
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Members of the League desiring action on, or information on, any subject are invited to communicate with the League or with the Chairman of the Committee to which it seems to appertain.

Prepare Now to Fight the Cane Borer

By T. E. HOLLOWAY AND W. E. HALEY,
Bureau of Entomology,
U. S. Department of Agriculture.

We have been asked by certain planting interests to say something about the control of the cane borer at this time, when it seems that the insect is at a minimum in numbers. Probably due to the wet winter and spring, there are at present comparatively few borers in the cane, and it is likely that the tropical hurricane of August 25th reduced their numbers still more.

Going back through our records, we find that the year 1919 was also a low borer year. The loss to the cane crop due to borers was only 9%. Nothing was done to keep the borer in check, and in 1920 it had so far recovered as to cause a loss of 19%. In 1921 it did still better, from its point of view, with a loss of 25%. It therefore seems extremely desirable from the planters' point of view that efforts should now be made to hold the borer under control.

Those planters who are not willing to make any changes in their field methods need not read further, as lessening insect damage necessitates changes in field methods as the least expensive method of control.

First, the practise which experiment station people unanimously favor, not burning the cane trash but plowing it under lightly, is recommended. This adds organic matter to the land, leaves it in a light, open condition, and has been found to decrease the damage from the borer. Last fall we found that at Mr. John M. Caffrey's Columbia Plantation, where trash had not been burned, the borer damage was fifty per cent less than elsewhere over the state. The additional labor due to cultivation with the trash in the field amounts to about a dollar per acre.

Second, the fields after cutting should be left free of scraps of cane and tall stubbles likely to contain borers which will pass the winter and emerge as moths next spring. Tall stubbles should not be left, and as the cutting gangs can not be counted on to cut low enough the cutting should be done with a simple machine such as some planters use. In this case the cane is topped and cleaned by hand, and then the machine with two revolving knives is driven through and cuts the cane as low as desired. During winter days when the labor is not otherwise occupied the scraps of cane left about the roads, fields, derricks, etc., should be carefully collected and destroyed. A plantation should be kept as free as possible from rank grasses which may harbor the borer.

Third, corn should be replaced by a crop better fitted to restore the lands and avoid borer propagation. Corn is like an incubator for the borer. It is the favorite food plant, in which the borer multiplies very rapidly and in large numbers. Corn also removes from the soil the same elements of plant food which are needed by the cane plant. Many sugar planters say that corn is grown at a loss. It seems likely that it should be replaced by soy beans.

Fourth, plant cane should be soaked for 72 hours in water of ordinary temperatures before planting. Any planter can devise some kind of dipping tank. It is true that this treatment gave rather unfortunate results at Pharr's Avoca Plantation at Morgan City, but the treated fields were interspersed with untreated fields of plant cane and with stubble fields, and as the treated cane was the first to germinate in the spring it attracted the borer moths. It stands to reason that a treatment which destroys thousands of borers and hastens germination is beneficial. The cost for the water is nothing, while the cost of the treatment is simply the extra handling of the seed cane.

In conclusion, it should be stated that borer control work has to be practised on a large scale. We know what happened at the Pharr plantation, though anyone could see that thousands of borers were drowned in the water where the cane was soaked. It is the same with not burning the cane trash. Over one field no results are evident, but over a whole plantation it will be found to be beneficial. These suggestions should be adopted over the whole plantation or not at all.

Tucuman and Louisiana—A Parallel. History Repeats Itself if Planters Help Themselves

By ARTHUR H. ROSENFELD
Special Technologist for Cane of the Porto Rican Insular Experiment Station (formerly Director of the Tucuman, Argentina, Sugar Expt. Station) Consulting Technologist of the American Sugar Cane League.

The sugar-growing country which most closely resembles the State of Louisiana in climatic and soil conditions, is that which lies in the little northwestern Argentine province of Tucuman. While located some four degrees closer to the Equator than the cane area of the Pelican State, the average elevation of some 1200 feet above sea level nullifies the advantage Tucuman would otherwise have over Louisiana in freedom from frost or rarer visitation of cold. As a result of this elevation and her immediate proximity to the very high and perpetually snow-covered Aconquitja chain of the mighty Andes, Tucuman's growing season is of just about the length of Louisiana's and just about the same development of cane and very comparable sugar contents, purities and factory yields can be expected over a series of years in the two countries.

The wide-awake Government of the province of Tucuman, when in 1907, it decided to establish an experiment station to investigate the constantly falling-off yields of her canefields, recognized this similarity and resolved that it could learn much from the progressive Pelican State in regard to facing its problems and conducting a sugar experiment station. Mr. R. E. Blouin, then Director of the Audubon Park Sugar Experiment Station, was immediately contracted by the commission in charge of the organization of the Tucuman station and Mr. Blouin, shortly after his arrival in Tucuman in 1908, secured the services as Sub-Director of the former Research Chemist of the Audubon Park Station, Dr. F. Zerban, now Chief of the New York Sugar Trade Laboratory and at that time Director of the Sugar Experiment Station at Lima, Peru. When the station had been definitely located in 1910 and experimental work actual begun, Mr. Blouin secured the services of the writer, who succeeded Dr. Zerban as Sub-Director when the latter resigned to accept the position of Research Chemist with the Insular Experiment Station of Porto Rico in 1910, and the writer later took Mr. Blouin's place as Director when the latter decided to return to Louisiana in 1914. The new Director was extremely fortunate in securing for the position of sub-Director and Chief Chemist Dr. W. E. Cross, the Research Chemist of the Audubon Park Station, who in turn succeeded the writer when, in view of the striking success of the station work, he was induced to accept the management of the large Hileret sugar estates in Tucuman province.

This rather lengthy history of the *personnel* of the Tucuman Experiment Station is given for the purpose of emphasizing our parallel as showing that, not only are Tucuman conditions very similar to those of Louisiana, but that her problems were tackled by Louisiana-trained scientists, many of them being solved to the great and lasting benefit of that province. And the writer feels sure that he speaks not only for himself but for every other ex-Louisiana member of the old Tucuman staff when he states that each and every one of these men who contributed their bit to the resuscitation of the Tucuman sugar industry, when it was just as gravely menaced as is the Louisiana industry today, are more than willing to give any possible assistance or advice in the solving of the very similar problems which have presented themselves in the Louisiana industry some fifteen years after the Tucuman planters began securing Louisiana men to help them.

The P.O.J. Canes Save the Tucuman Industry.

It was early seen by Mr. Blouin and his associates that the so-called *native* canes, which were nothing more nor less than our old familiar *Louisiana Striped* and *Purple*—another parallel—were indeed decreasing annually in yield and that this decrease was due to a degeneration of the varieties commonly grown. This degeneration was later recognized as being due to Mosaic Disease—the same dread, insidious scourge which is today yellowing the Louisiana canefields and reducing her acre yields to figures which a few short years back would have been thought impossible by even the most pessimistic of her planters—and it was quickly seen that, although investigations along lines of cultivation, systems of planting, fertilization, irrigation, etc., were going to be very necessary and useful, our main line of work MUST be that looking toward the finding of some variety or varieties which, either thru immunity or tolerance to the scourge, would be capable of replacing the "Creole" canes and once more allow the Tucuman canefields to show profitable yields.

The degenerating effects of the Mosaic Disease, complicated by the unfavorable climatic conditions of our first years of investigation, manifested themselves more and more clearly in the years 1910, 1911 and 1912. Then came the exceptionally favorable conditions of 1913 and 1914 which dissipated to some extent the fears of the Tucuman planters by once more presenting fair agricultural yields and, for subtropical conditions, splendid industrial recoveries. These yields, however, while relatively good as compared with the immediately preceding years, demonstrated all the more clearly to us at the experiment station that the staple canes of the province were definitely undergoing a process of physiological degeneration, which we now know to be so peculiarly characteristic of the Mosaic Disease, else the yields under the exceptionally favorable conditions of those years should have easily been doubled in the fields. These opinions and forebodings were more than justified when the unprecedentedly favorable seasons of 1913 and 1914 were succeeded by the no less unprecedentedly *unfavorable* years of 1915, 1916, 1917 and 1918, when Tucuman produced instead of the 263,000 tons of sugar of 1914, considerably less than half of that amount in 1915 and less than 45,000 tons in 1916 and again in 1917. It would seem that those two years of 1916 and 1917 furnish another parallel with Louisiana conditions of last year, when her fields yielded an average of less than eight tons of cane per acre. In 1918, altho conditions were far worse than in any other year in the annals of Argentina's sugar industry, the effects of the new canes which we will now discuss had begun to make themselves notably felt in Tucuman's figures of production, that for 1918 being about as large as the total of the two preceding seasons—despite freezes which for earliness and severity established a glaring new record. Indeed, had it not been for these new canes in the crop of 1917, very little sugar would have been made even then, as the area of the native cane had been cut almost in half by 1916 and not more than ten per cent of what remained after the disastrous freezes of that year was worth while even cultivating for the 1917 crop. The small amount of the "native" canes which is today cultivated in Tucuman is cared for on strictly *sentimental* and by no means commercial grounds.

Now let us see how this emergency in Tucuman's sugar industry, so remarkably parallel to conditions in Louisiana's industry today was met and if the loss of the staple canes of the province meant the abandonment of the industry, as at one time appeared to be most dangerously probable. As stated above, while ordinary cultural investigations were by no means neglected, the station concentrated its efforts upon trials of all obtainable varieties, one or more of which might, under the most difficult conditions of the Tucuman climate and of the still more complicated state of affairs brought about by the ravages of disease in her canefields, flourish to a certain extent and at least give superior field and factory

yields to the suicidal ones then being obtained from the *Purple* and *Striped*.

Mr. Blouin, as soon as the station was established, brought from Louisiana some 126 varieties, representing canes from almost all the well-known sugar countries which were being experimented with in Louisiana at that time. In 1910 he secured from the experiment station in Campinas, Brazil, another 76 varieties, some of which represented duplicates of the Louisiana collection, and plantings were also made at the Station of six seedling canes from Java, produced by Kobus, where the dreaded Sereh disease was as seriously menacing the Javanese canefields as Mosiac Disease was at that time threatening our Tucuman ones, and is today holding the sword of Damocles over the heads of the Louisiana planters. These varieties had been imported as a result of the law creating the experiment station by the then Governor and later member of the experiment station board, Hon. Luis F. Nougues. Since that time some 15 or 20 of the more promising new varieties of different countries have been introduced each year, many of them giving far superior results to those obtained from the native canes even in their halcyon days. Since 1916 Mr. George L. Fawcett, the capable Botanist of the station, has produced several hundred seedlings in Tucuman, many of them promising Mosaic-immune crosses of the tropical canes with the vigorous North Indian type. It was, however, from four of the six seedlings produced at the East Java Experiment Station (*Proefstation OOst, Java*, hence the initials *P.O.J.* used before the serial numbers of these canes) that we obtained the canes which have since entirely supplanted the native and all other canes in Tucuman and which, if our present parallel works into the future, will shortly perform similar marvels in Louisiana.

In judging the new canes we had to seek the following points of superiority over the old ones: (1) Greater tonnage of cane with (2) juices containing a higher percentage of crystallizable sugar, (3) greater resistance to the attacks of Mosaic and other diseases, as well as to insect ravages, (4) ability to withstand considerably lower temperatures than the "native" canes and (5) the furnishing of *more* and *better* fuel in the shape of the bagasse. The latter is of even more importance to Louisiana, where the manufacture of *Celotex* has assumed economic proportions, than to Tucuman.

This discussion would be unduly prolonged were we to enter into details of the various experiments conducted with varieties over the five-year period which was necessary to definitely prove the far superior value, under each of the above points, of the *P.O.J.* 36, 213, 228 and 234 canes over the "native" and the hundreds of other varieties tried during that period. Suffice to say that these experiments were carefully conducted under normal field conditions, first at the main station, and, after a couple of years work had indicated the superiority of these four varieties, on large-scale substations all over the province, these latter being made, not only with the idea of checking up the results at the main station and trying out these canes under the varying conditions of this very diversified little province, but also with that of rapidly multiplying these promising canes to the point that once any of them had proven to be definitely superior to the varieties generally in use, there would be material for their rapid extension to meet the crisis which we already visualized close upon us.

To summarize the results obtained, we will merely state that by the end of the fifth year of trials with these varieties, under almost every climatic condition conceivable for Tucuman, (these five years including one more or less normal year, two exceedingly favorable and two record-breaking unfavorable seasons climatically), our average over the five-year period showed an annual yield of 9 tons of cane and about ¾ tons of sugar per acre for the "native" canes, whereas the *P.O.J.* 213 had averaged about 30 tons of cane and 2½ of sugar; the *P.O.J.* 36—26 tons and 228—24 tons of cane. The *P.O.J.* 234 showed an average under identical conditions of over 20 tons of cane per acre, its uniformly high sugar content under every condition causing its production of sugar to reach almost 2 tons per acre. For the four *P.O.J.* varieties the average annual yield during these five years was 25 tons of cane and well over 2 of sugar—almost three times the yield of the *Purple* and *Striped*. Besides the question of cultural yield, we had been able to prove definite superiority on each of the counts we had established as our points of needed superiority at the beginning of these investigations.

The time had come, therefore, for the Tucuman experiment station to make definite recommendations for supplanting the native *Striped* and *Purple* canes with the *P.O.J.* varieties and in 1915 an active propaganda was started by the writer to induce the planters, to do so.

With the crop of 1915 a complete failure, many of the progressive planters of Tucuman at last put their prejudices and sentiments into their pockets and began to plant the new canes more vigorously, many of them paying enormous prices for their seed to the more enterprising and far-sighted men who had already established fairly large plantings of these promising varieties. When in 1916 the average yield of the "native" canes dropped to only about 8 tons—(compare with Louisiana's 1924 yield)—the prejudices against these foreign invaders in their canefields almost entirely disappeared, and some 50,000 acres were laid down in these new canes, the *P.O.J.* 213 predominating. Some 60,000 acres more of the *P.O.J.* canes were planted in 1917.

In 1919 Tucuman produced the second largest crop in her history—over 246,000 tons,—about 90% of this being made from *P.O.J.* canes, altho about 30% of her cane area was still in the "native" canes. By 1920 the latter had practically disappeared from commercial production and it is an actual fact that today, when an occasional stalk of *Purple* or *Striped* cane is seen on a conductor in Tucuman, it is viewed with curiosity and interest—often by some of the very persons who a few years before had laughed at the idea of their places ever being taken by the much less aesthetic looking Java seedlings. Last year Tucuman produced 310,000 tons of sugar a new record! Such is the revolution wrought in the "Garden of the Argentine Republic" by the use of the *P.O.J.* canes!

An idea of the magnitude and expense of this reconstruction may be gained from the fact that the "Ingenio Santa Ana", then the largest sugar place in South America, the plantations of which the writer took charge of in 1916, had for the crop of 1915 some 15,000 acres of cane, not one stalk of which was of the *P.O.J.* varieties. In his first two years on this estate these huge plantations were entirely renovated at a cost of over a million and a half dollars, and for the crop of 1918 we did not have a single stalk of *native* cane.

A Glimpse at Louisiana Conditions Today.

It has been the privilege of the writer in the last two years to make several trips thru a part of the sugar district of southern Louisiana and, while he did not have sufficient time at his disposal to get a general view of the Louisiana canefields, the portion which he did see reminded him strongly of the condition of the Tucuman fields in the years 1915 and 1916, when the *Striped* and *Purple* canes had virtually "gone on a strike", and when the Tucuman Experiment Station under his direction was bending every effort towards the rapid substitution of these by the then thoroughly proven *P.O.J.* 36, 213 and 234. The native plant cane was coming up weak and yellow, with almost complete infection with Mosaic Disease, while the stubble in most cases looked absolutely pitiful to one who had known Louisiana in better days with extremely scattered stooling and the typical yellow appearance so characteristic of a combination of drought and primary Mosaic infection. At Southdown Plantation, where there are some hundreds of acres of *P.O.J.* 234, the comparison with the old Tucuman conditions was particularly striking, for here the yellow color of the fields in general would be crossed or spotted with dark green stripes or fields, looking like pasture land in the midst of the canefields. These invariably turned out to be either isolated rows or substantial fields of the *P.O.J.* canes, or of the Mosaic immune, but low sugar-content *Cayanna* 10, growing vigorously and stooling heavily alongside of the aenemic-looking, sparsely stooling *D*-74, *Striped* or *Purple*.

What of the Future?

Of course the data obtained on any varieties under the peculiar conditions of one country can never be applied *in toto* to those of another, however similar it may be, for it has been the history of sugar cane varieties in general that a cane which has done very well in one country may turn out to be a complete failure under apparently similar conditions in another. *D*-1135 was considered to be one of no value whatsoever in Demerara, where it was produced by that veteran of seedling production, Sir John Harrison, but it is, nevertheless, the most popular cane in Queensland today, is very promising in parts of Porto Rico and its acreage is rapidly increasing year by year in the Hawaiian Islands, whereas *D*-74 and 95 never gave the results in the country of their birth that they did in Louisiana for many years. Examples of this sort could be cited *ad infinitum*. For this reason careful experimental work should always precede the changing of old tried varieties for new ones which may have shown wonderful results in another country, and, altho it appears that Louisiana should at present multiply her *P.O.J.* 234, 36 and 213 just as rapidly as it is possible for her to do so, in view of the crisis facing her industry, she should meanwhile by all means be conducting carefully planned comparisons of these and other promising varieties in the distinct zones of her sugar section and look upon the *P.O.J.* 234, which she happens to have in comparative abundance, not as the final panacea of all her troubles and the final goal of her varietal changes, but as a cane which at least bids fair to maintain her industry while better and richer varieties are being sought for and thoroughly proven both by the individual planters and mill owners and by her Experiment Stations. If this is done, and if the Louisiana planters show the same spirit of tenaciousness and progressiveness that they have shown in many other emergencies, the writer believes that they are justified in taking an optimistic view of the situation and that, justifying the faith and foresight of such of her pioneers as Dr. William Carter Stubbs and his associates of "the old guard which dies but never surrenders", Louisiana will experience a renaissance similar to that of distant Tucuman, and will in the no very distant future once more be producing 300,000-ton crops, once more have her factories all grinding for full seasons and once again see her sugar industry at the forefront of the great contributors of the wealth and well-being of the old Pelican State.

Louisiana's Forward Step

(An Editorial in FACTS ABOUT SUGAR, Issue of Sept. 15, 1926.)

Evidence of the determination of Louisiana sugar producers to restore their industry to a more satisfactory footing than it has occupied in recent years is afforded by the announcement which we published last week of the appointment by the American Sugar Cane League of Arthur H. Rosenfeld as general advisor and crop director. The disastrous experiences of the past few years, and especially the heavy losses from freezes, from the cane borer and from mosaic, apparently have convinced the majority of those who have given study to the situation that the only hope of reestablishing sugar production on a profitable basis is to replace the canes heretofore generally cultivated with new varieties better adapted to Louisiana's climatic conditions, and to wage a vigorous warfare against the pests and diseases that have proved so destructive in recent years.

By training and experience Dr. Rosenfeld appears especially fitted to deal with the problems presented by the Louisiana situation. Prior to his appointment as special cane technologist at the Rio Piedras Experiment Station in Porto Rico, he was located at the Tucuman Experiment Station in Argentina, and before that he was connected with the Sugar Experiment Station in Louisiana. During the past few months, in connection with the Tropical Plant Research Foundation, he has been engaged in a special mission to Peru to advise the sugar producers of that country in regard to possible changes in cane varieties and methods of handling their crop that might be to their advantage.

It will be recalled that it was through the publication by FACTS ABOUT SUGAR of articles by Dr. William E. Cross, director of the Tucuman Experiment Station, that the attention of Louisiana sugar producers was directed to the desirability of adopting new cane varieties that had given highly satisfactory results under the somewhat similar climatic conditions of Argentina. The discussions and investigations that resulted have led to the introduction into Louisiana of P.O.J. canes and of other new and promising varieties. The experience of Dr. Rosenfeld with these P.O.J. canes in Argentina, as well as the special study he has given to general field problems under varying conditions, qualify him particularly for the task he is to assume in Louisiana.

As we understand it, Dr. Rosenfeld has been engaged for a term of five years and the directors of the American Sugar Cane League propose to supply him with ample resources for carrying on his work. The fact that he is in private employ will give him greater freedom of action than is enjoyed by members of state controlled organizations, and the fact that the American Sugar Cane League has undertaken a campaign that is to extend over a period of at least five years indicates that its officers are not underestimating the size of the task before them. No one man and no single remedy can solve all of Louisiana's problems, but with able leadership and sincere cooperation among members of the industry a great deal can be accomplished to improve conditions. FACTS ABOUT SUGAR extends both to the League and to Dr. Rosenfeld the hope of a gratifying success in their endeavor to inaugurate a new era of prosperity in the Louisiana sugar industry.

LIST OF MEMBERS OF THE AMERICAN SUGAR CANE LEAGUE OF THE U. S. A. WHO HAVE PAID THEIR DUES FOR THE YEAR 1926

Arceneaux, Geo. D.
Ayo, Dr. J. J.
Alkens, Albert
Alexander, C.
Alexander, C. W.
Alexander, R. B.
Allen, Harris
Ambeau & Jackson
Anderson, Ehlert
Anderson, F. B.
Anltus & Adras
Anselmo, F.
Anselmo, F. & Lobello
Arcemont, Oscar
Arcemont, W.
Arceneaux, Cezare
Arceneaux, Elphlge
Arceneaux, Ernest
Arceneaux, J. A.
Arceneaux, Joseph E.
Arceneaux, Odressie
Arceneaux, Victor
Arceneaux, Wilfred
Arceneaux & Bartley
Aucoin, P.
Autin, Alex
Agulllard, Roselus
Allen, S. H.
Amos, W.
Aguillard, Wesley
Amand, Albin
Agulllard, Rosellus
Aguillard & Gultroz
Arcement, Albert
Anderson, Gus
Adams, W. A., Jr.
Alford, Will
Adams, W. A., Sr.
Anita Pltg. Co., Ltd.
Aucoin, Edgar F.
Alexi, Jos & Laurent
Aubert Bros.
Aupied, Camile
Aupied, Ulyse
Atchison, J. R.
Ardoyne Pltg. Co.
Anthony, George
Alberado, David
Anserillo, Sam
Albert, Clesmy
Albert, Moise
Anthony, Neuville
Adonis, Clermille
Alleman, Mrs. M.
Arceneaux, Ellis
Arceneaux, Evest
Arceneaux, Zeph.
Aucoin, Camille
Aucoin, Octave
Billeaud Sugar Co.
Burrows, H. S.
Burguieres, Jules M.
Babin, Adam
Babin, A. R.
Babin, Belonie
Babin, Bertin
Babin, Euclide
Babin, Eugene
Babin, Henry
Babin, Hypollte
Babin, J. E.
Babin, J. F.
Babin, Joseph
Babln, Ledien
Babin, Leon
Babin, Lucien
Babin, M. B.
Babin, M. P.
Babin, Noel
Babin, Richard
Babin, S. B.
Babin, Sosthen
Babin, Mrs. S. R.
Babin, Ulger
Babin, U. J.
Babin, Vincent
Babin, W. A.
Babin, Wright
Babin, Wright & Aknes
Babin & Aikens
Babln & Guidry
Bailey, J. H.
Baker, G. H.
Baker, L. P.
Bananto, Chita
Barilleaux, A. L.
Barthelmy, P.
Bartlay, T.
Baye, Joe
Baye, Paul
Bazlle, F.
Belle Helene Sugar Co.
Bercegeay, Adam
Bercegeay, Alphonse
Bercegeay, Lucien
Bernard, Edw.
Berteau, G.
Berthlot, F. L.
Bivona, Bastiano
Blanchard, Camille
Blanchard, C. J.
Blanchard, D.
Blanchard, E.
Blanchard, Emlle
Blanchard, Mrs. Joe
Blanchard, L. P.
Blouln & Duplessls
Blouln, Chas.
Blouin, Joseph
Bordelie, C.
Borne, A. P.
Bornman, D. L.
Boudoin, Emile
Boudreaux, Alcest
Boudreaux, E.
Boudreaux, Sylvan
Boudreaux, Louis
Boudreaux, U. B. & T. G.
Bourgeols, A.
Bourgeois, Allen
Bourgeols, Amond
Bourgeois, Claude
Bourgeois, Donate
Bourgeols E. P.
Bourgeois, F.
Bourgeols, Fergust
Bourgeois, Gracien
Bourgeols, Joe
Bourgeois, Mrs. Julla
Bourgeols, Mrs. Ophella
Bourgeois, Louis
Bourgeois, Taylor
Bourgeois, Vilry
Bourgeois & Foret
Bourgeois & Smith
Bourgeois & Toups
Bourque, Emile
Bourque & LeBlanc
Bourque, E. M.
Bowie Lumber Co., Ltd.
Boyance, Chas.
Boyance, Dulva
Boyance, Jules
Boyance, Willle
Boyance & Broussard
Boyance & Vallo
Braud & Chafney
Braud & Freeman
Braud, Albert
Braud, Mrs. Albert
Braud, Alfred
Braud, Armond
Braud, Chris
Braud, Edmond
Braud, E. J.
Braud, Forest
Braud. G. P.
Braud, H. B.
Braud, Isaac
Braud, Leo
Braud, Lconce M.
Braud, Louis
Braud, Rene
Braud, Sidney
Braud, Ulysses
Broussard & Broussard
Broussard & Delcambre
Broussard & Dremstedt
Broussard & Paul
Broussard & Segura
Broussard, Adolf
Broussard, B. F.
Broussard, Cal
Broussard, Clomare
Broussard, Evrard
Broussard, Francis
Brazan, Louis
Becnel & Falgoust
Becnel, Antoine
Broussard, Mrs. H. C. & Aikens
Broussard, J. J.
Broussard, M. D.
Broussard, Oleus & Le-Blanc
Broussard, Pierre
Broussard, Prosper
Broussard, Remie
Broussard, Vincent
Brown & Dixon
Brown, A. N.
Brown, C. W.
Brown, E. S. L.
Brown, Joe
Brown, S. T.
Brown, Wllllie
Bruno, Jos.
Burkett, E. J.
Burns, A.
Burton & Vallery
Binkley, V. L.
Bergeron, H. J.
Bergeron, Mrs. Leon
Bergeron & Guerln
Bouanchaud, L.
Bubenzer, H. K.
Brown, W. B.
Brooks, Rose
Barone, Sam
Bubenzer, M. C.
Brunson, Dan
Brooks, Luvina
Baptiste, Emlle
Berthier, P. E.
Baptiste, T. J.
Bergeron, R. L.
Beatty, Wlllle
Beusche, Henry
Beusche, Joseph
Baum, A. J.
Bouanchaud, Lam
Bertonlere, S. E.
Ballard, Hayes
Bergeron & St. Romain
Bergeron, Mrs. L.
Bergeron & Guerln
Bank of Labadie
Brown, Wm.
Bergeron, Alclde
Barbler, A. & Sons
Boudreaux, John
Boudreaux, Albert
Bergeron, Joseph
Bernard, Clay
Blanchard, Xavier
Boudreaux, Pavle
Boudreaux, Theodule
Bowman, Hy.
Butler, Allen
Bergeron & Walton
Belle Terre, Inc.
Benedetto, Tony
Beck, James D.
Babln, Trasimond
Babin, Mrs. Omer
Bilello, Antonio
Billelo, Chas.
Bourgeois, Wilfred
Bourgeois, L. A.
Breaux, Alphonse
Babin, A. M.
Breaux, Aubin
Bernard, Elie
Bergeron, Joseph
Bonvillian, Est. B.
Bergeron, Adam
Bartlett, Aubrey
Baker, R. L.
Barras & Boudreaux
Barras, Desire
Barrillieu, M.
Bourgeois, Philip
Belle Grove Plantation
Berthelotte, G.
Bourgeois, A.
Babin, Tedule
Bergeron, Jim
Bodin & Perret
Burguieres, J. M. Co., Ltd.
Bank of Napoleonville
Brooks, Nathan
Bordelon, Clinton
Brouilette, F. P.
Blouin, R. E.
Bush, R. G., Jr.
Boudreau, Elton L.
Barras, Louis
Barras, Edward
Boudreaux, Junius
Barras, Jos. A.
Blanchard, Cesaire
Barras, S. & C. Godet
Barras, Alcee
Barras, Rene
Bienvenu, Gabriel
Bourda, Louis
Berard, Leon
Barras, Gam
Boudreaux, Hulls
Borel, Eusebre
Borel, Dolson
Barras, S. & F. Blanchard
Bijeaux & Dugas
Bijeaux, Achille
Beyt, J. L.
Barras, Arville
Barras, Batiste
Barras, Chas. H.
Bernard & Beyt
Blanchard, Ambroise
Barras, Chas.
Bourk, Daniel
Barras, Dernavlle
Broussard, Frank
Borel, Laurnet
Bernard, Molse
Bernard, Edwln
Barras, Chas. H.
Boudreaux, Clofa
Barras, John
Barras, S. & A. Delaune
Bernis, Cyrus
Broussard, Sully
Boudreaux, Alcide & Co.
Borel, Dorsey
Bourgue, Mrs. Simlllien
Bernis, E. J.
Bernls, Allzla
Berard, Aniset
Bernard, Dumas
Boudreaux, Arcema
Boudreaux, Delma
Bernard, Charles
Bernls, Ben
Bank of St. Martlnville
Boudreaux, Homer
Barker & Lepine
Belanger, Joachim
Bergeron, Adam
Blanchard, Clay
Blanchard, Felix
Blanchard, Jos.
Blanchard, J. R.
Blanchard, T. & L.
Boquet, Jos.
Boquet, Jules
Boquet, Louis
Boquet, Norris
Boquet & Walker
Bourg, Severin
Bourg, Telesphor
Breaux, Artai
Breaux, Arthur
Breaux, Harry
Brien, A. E.
Brien & Marlbrough
Brunet, Est. Theo.
Carrouche, Frank J.
Champagne, L. G.
Celotex Co.
Coates, Dr. C. E.
Corde, Louis
Colonial Sugar Co., Inc.
Cantrelle, William
Caccagne, Charley
Cambre, E.
Cambre, L. A.
Canal Com. T. & S. Bank
Champagne, Prosper
Charles, Antoine & M. Rome
Chauvin, Albert
Chedotal, T.
Chlasson, Henry
Chiasson, Leon
Chiasson, Noah
Chiasson, Noah & Ben Knight
Christy & Wllson
Christy, Eugene
Christy, Preston
Christy, W. A.
Cicet, Leonce & Eva Caire
Citizen, Thos.
Clayton, Lawrence
Clayton, W. A.
Clement, Hamllton
Clomare, Ludovlc
Clouatre, Mrs. E. & J. A. Clouatre
Clouatre, J. E.
Clouse, O. & C.
Coleman, Nas
Coleman, Son
Colonial Sugars Inc.
Comeaux & Derouen
Comeaux, Camille
Comlsh, Mose
Convent Vegetable Farms
Cooper Scott & Son
Cooper, H. E. & Jenkins
Cotton, E. D.
Courtnay, Chas.
Creecy, Louis
Cureau, C.
Civello, A.
Chustz, Sam
Chustz, Wllle
Chustz, Dolzey
Cifero, Henry
Celestin, Cyril
Carmouche, Leo
Clayton, George
Cappel, Curry
Cado, Joe
Chrlstian, Dave
Cunlgan, Bose
Coleman, Henry

Cottena, P.
Chenevert, Clair
Chenevert, F.
Cline, Willie
Castello, Joe
Clause, St. Clair
Clause, Willie
Champagne, Valery
Canal, Peter
Cappel & O'Brien
Cataldo, Joe
Consolidated Sugars Co., Inc.
Chequelin, S. G.
Ciotilda Plantation
Champagne, Honore
Cinclaire Central Factory
Cocke, R. W., Jr.
Carroll, S. D.
Coco, J. A.
Champagne, Louis
Courville, Olivier
Chatagnier & Dugas
Crouchet, Louis
Chretien, Prosper
Caperona, Sam
Champagne, Willie
Cutrer, Quincy
Champagne, Jos.
Champagne, Deviliier
Charles, Alexandre
Carlos, Alcide
Champagne, C. D.
Charpentier, Edgar
Charpentier, Est. Elize
Charpentier, Jos. C.
Chattegnier, Nicholas
Chauvin, Clay
Chauvin, Harry
Champagne, Chas. J.
Dibert, Bancroft & Ross Co.
Dodson, Dr. W. R.
deBoisblanc, J. H.
Daigle, A. D.
Daigle, Augustin
Daigle, D. I.
Daigle, Ernest
Daigle, J.
Daigle, Placide
Daigle, S. O.
Danos, Clement
Darville, Dave
Darville, John
Darville, Theodore
David, Alphe
David, Augustin & LeBlanc
David, O. L. & Adam
David, O. L. & Lonnie
Daviet, Mrs. & Folse
Debure, Oliva
Decuir & Delcambre
Degresse, Adonis
Delaune & Linteson
Delaune & Villar
Delaune, E. H. & McCullum
Delaune, Frank
Delaune, J.
Delaune, J. N.
Delaune, J. S.
Delaune, W. H.
Delcamhre & Thoe
Delcambre, Alfred
Delcamhre, Arestile
Delcambre, Arthea
Delcambre, Arthur
Delcambre, Onelia
Demus, A. L.
Derouen & Aucoin
Derouen & Boudreaux
Derouen & Clairphe
Derouen & Joscph
Derouen & Leonce
Derouen & Marine
Derouen & Octave
Derouen & Pine
Derouen & Salome
Derouen & Uval
Derouen, Acklin
Derouen, Emile
Derouen, Hamilton
Derouen, Leonce
Derouen, Marcel
Derouen, Marius
Derouen, Oniel
Derouen, Oscar
Derouen, Sidney & Moore
Derouen, Simillien
Derouen, Mrs. Thomas
Desermeaux & Landry
Digiralmo, Frank
Dionne, Leodias
Dipoma, Cario
Dixon, C. E. & Parham
Dixon, Euseb
Dixon, E. D.
Dixon, Leslie & Christy
Dixon, William
Dixon, W. L.
Douglas, Adam
Dovant, Alexandre
Dufresne, I.
Dugas, Leonce
Duhe, D.
Duhe Bros.
Dunn, Dan
Dupiessis Bros.
Duplessis, Adam
Duplessis, Mrs. Afride
Duplessis, Alex
Dupiessis, J. E.
Dupiessis, Joe
Duplessis, J. W.
Dupiessis, Lawrence
Duplessis, Lawrence & West
Duplessis, Theodore
Duprelon, LeBlanc & Lee Lemarie
Dyer, John
Dyer & Brooks
Dyer & Richardson
Dabadie, Hazaei
David, Ozeme
Dabadie, J. A.
Dabadie, Henry
Dabadie, F. S.
Dabadie, Louis
Davis, Mitchei
Davis, Alcide
Dabadie, Alphonse
David, Mortiuer
Drummond, John
Dodson, George
Dunbar, Aaron
Duncan, Thomas
David, Willie
David, Mrs. McNeil
DeBeuedetto, R.
David, Athaniel
David, F. O.
Dunbar, Mrs. Betsy
Dubase, Omer
Daisy, Tom
Decuir, F. E.
Doiron, Numa
Delaune, T. J.
Diez, Theodule
Donnise, Edgar
Diesi, Sam
Daigle, E. J.
Dufresne, Ben
Dufresne, Olivier
Daigie, O. J.
Durande, Leonce
Drouet, Est. E. M.
Davis, John
Drake, Willie
Dupuis, Homer
Duplantis, J. W.
Doucet, Husville
Delatte, Jos.
Duplantis, J. W.
Delaune, Halphen
Dugas, Lee
Dugas & Barras
Dugas, Armas
Decoup, Alfred
Duplantis, J. W.
Dugas, Mrs. Henry
Delaune, Fred
Durand, John L.
Deroche, James
Deroche, Lawrence
Deroche, Oleus
Duplantis, August
Duplantis, Cleophas
Duplantis, Elie
Duplantis, Mrs. Euzebe
Duplantis, J. B.
Duplantis, J. G.
Duplantis, John M.
Duplantis, Luke
Duplantis, Narcisse
Duplantis, Walter
Eroche, Dr. W. J.
Ezidore, A. S.
Edler, Louis
Emillien & Marcel
Eroche & Hebert
Etienne, A. N.
Ettic, Douglas
Elloie, Augustin
Elloie, Edward
Edwards, Sam
Esco, Joe
Evens, W. P.
Ellington Sugars, Inc.
Ewell, J. S.
Ellender, Abby
Ellender, David
Ellender, Hymond
Ellender, Mrs. Jos.
Ellender, Lee & Dennis
Elleuder, Lee
Ellender, Paul
Ellender, Thos. J.
Ellender, Willie J.
Ellender & Bourg
Ellender & Robichaux
Ellender & Pitre
Ellender, E. & W.
Falgoust Bros.
Fauntieroy, J. Y. & Co.
Froisy, James J.
Fage & Darphiny
Fages & Doffina
Fages, Jules
Fage, Leon
Faicon, F. & L.
Falgoust & Dufrene
Falgoust, Celestin
Falgoust, Francis
Falgoust, Selestin
Ferguson, E. E.
Fernand & DeBianc
Fickiin, Freddie
Folse, Pierre
Foret, Adolph
Foret, Albert
Foret, Augustin
Foret, Ignace
Forct, Leo
Foret, Ovilie
Foret, P. Bennie
Foret, Mrs. & C. Williams
Foret, P. D.
Fabre, F.
Ferguson, Love
Frazier Bros.
Frith, H. W.
Fabre, Joseph
Fabre, Leon
Fariouis, Ernest
Forti, Mitchell
Fabre, F.
Falcon, Jos.
Falcon, Est. Emanuel
Fontenet, Louis
Fcfite, Eugene
Faucheaux, Jos.
Faucheaux, Kelly
Freeman, C. B.
Francois, Marcelin
Francois & Gonsoulin
Frederick, Henry
Francis, Henry
Francis, Gerard
Francis, Therestide
Francois, M. & St. John Pltn.
Francois, J. B.
Fanguy, Edgar
Fanguy, Gerard
Fanguy, Sylvester
Fanguy, Volcar
Fitch, Marshali
Foret, Arthur
Frickey, Eddie
Gambel, C. J.
Grasselli Chemical Co.
Guell, Prof. A.
Gheens, C. W.
Golden Star P. & M. Co.
Gajan, Est. of E.
Gaines, Jessie
Gaudet, Eusebe
Gaudet, Ferdinand
Gaudin, Ambrose
Gaudiu, C. J.
Gaudin, J. Omar
Gaudin, Omer
Gaudin, J. J.
Gaudin, Maurice
Gauthe, P.
Gautreaux, A.
Gautreaux, Clarence
Gautreaux, Clement
Gautreaux, C. N.
Gautreaux, Colomb
Gautreaux, Cyrilie
Gautreaux, Edward
Gautrcaux, Florien
Gautreaux, Harry
Gautrcaux, J. J.
Gautreaux, L. J.
Gautreaux, L. P.
Gautreaux, Mary
Gautreaux, M. B.
Gautreaux, Nestor
Gautreaux, Oreal
Gautreaux, Paul
Gautrcaux, Prudhome
Gautreaux, S. P.
Gautreaux, Ulyse
Generos, Philip
Geoffrey & Geoffrey
Georgelle, C. A.
Georgelle, Gypsy
Gibbous, J. D.
Goffney, Price
Gonzales & Hillard
Gonzales, Mrs. A. A. & Jackson
Gonzales, Mrs. A. A. & Mayer
Gonzales, Dewey
Gonzales, J. E. & Bourgeois
Gonzales, J. E. & Moran
Gonzales, J. O. & Bartley
Gonzales, Joe & Hillard
Gonzalcs, U. M. & Burton
Goutrias, Arthur
Grabert, Albert
Grabert, Evariste
Grabert & Robichaux
Grabert, Oscar
Granier, Brady
Grant Smith & Co.
Graugnard, Emile
Grayson, Tim
Griffin, Chas.
Gros, Emile
Guegneaux, John
Guidry & Landry
Guidry, Alfred
Guidry, Daniel
Guidry, Emile
Guidry, Emile J.
Guidry, Ernest
Guidroz, Emile J.
Gigiio, Frank
Glass, J. W.
Gordon, W. S.
Goudeau, M. J.
Garon, Charles
Guerin, Mozart
Gordon, R. A.
Gordon, Morgan
Guidroz, E.
Gourdon, Leon
Gosserand, Morris
Gosserand & David
Gosserand & Langiois
Guidroz, J. A.
Gray, Charles
Gautreaux, Julien
Gautreaux, A. & Sons
Gomez, Antoine
Guidry, F. J.
Gaiennie, L. R.
Goubert, O. J.
Gros, Leo
Gautreaux, Aubert
Garrett, Jake
Gibson, Wili
Gremillion, J.
Gentile, Andrew
Gentile, Paul
Gucrin, Adam
Gauthier, Eugene
Gremillion, Tobie
Gremillion, Euzebe
Guidroz, Ludovic
Guerin, Antoine
Gremillion, Willie
Graves, Bienville
Guidroz, Aguillard
Gremillion, Ernest
Gremillion, Wiiliam
Gray, Chas.
Gourdon, Leon
Gautreaux, Maurice
Gautreaux, Adolph
Gros, Augustin
Gros, Oville
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Gros & Webre
Gilmore, A. B.
Guidry & Hymel
Gerace, J. A.
Gaude, Mrs. C. M.
Glenwood Sugars Inc.
Gerard, John
Gerard, Duplain
Gautreau, Louis
Gautreau, Joseph
Gautreau, Wallace
Guidry, Adolph
Guidry, Emile
Guidry, Isaac
Guidry & Blanchard
Guidry, Felix E.
Guidry & Martin
Guidry & Lecompte
Guidry, F. P.
Hersey Mfg. Co.
Haas, Dr. W. D.
Holloway, T. E.
Hebert, Gaston
Hadley, Ed.
Hadley, L.
Hall, Richet
Hamilton & Alphe
Hauna, John
Haydel, C. A.
Haydel & Sons
Heath, Ovead
Hebert, Bernard
Hebert, Clovis
Hebert, J. C.
Hebert, Noah
Hebert, W. J.
Henderson, Wink
Henry, James
Henry, Joe
Herthum, Fred
Hodgcson, W. W.
Howe, Wesley
Hudson, A.
Hebert, Willie
Hebert, Zenon
Hurst, Henry
Hebert, Paul
Hall, B. W.
Hickenburg, H.
Haas Land Co.
Hodgest, Liza
Harrison, Granerson
Hurdle Bros.
Hebert, Alphee
Hudspeth, Alphee
Hudspeth, E. V.
Hebert, J. P.
Hurst, Henry
Hutson, F. H.
Himel, Adam
Himel, Davaisin

Hiriard & Robert
Hebert, Edgard
Hymel, Adam
Hebert, Lodias
Himel, Louis
Hildalgo, Frank
Haas, Hans
Hymel, B. & Sons
Haydel Bros.
Hymel, Ben
Hymel Bros.
Hudson's J. P. Sons & Co.
Hickenberg, Henry
Hackenyos, L. J.
Hebert, Louis
Home Place Land Co.
Holloway, Dr. W. A.
Hynson, W. R.
Harvey, Maurice
Hepting, Marting
Hebert, Chas.
Hebert, Jos.
Harris, Junaus
Hebert, Alfred
Hebert, Amedee
Hebert, Mrs. Geo.
Hebert, Magnel
Hebert, Wm.
Hotard, J. P.
Hutchinson, Alfred
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Innis, John
Joubert & Goslin M. & F. Co.
Jackson, Joe
James, Louis E.
Jefferson Pltg. & Mfg. Co.
Jemmie & Densmore
John & John
Johnson, W. H.
Jouty, H.
Jefferson, Dan
Jackson, Edgar
Jarreau, Aristede
Johnie, Toney
Jarreau, Alcide
Jarreau, Numa
Jarreau, Alfred
Jarreau, Raefield
Jackson, Henry
Julian, Nono
Jarreau, Octave
Jackson, V. O.
Joseph & Schexnaydre
Joseph, Victor
Johnson, William
Johnson, Albert & Mrs. A. Lee
Johnson, Albert
Jones, Isaac
James, Arthur
James & Broussard
Jacquet, Leonard
Judice & Barras
Jones, Ozeme
Judice, Bebe
Judice, Beauregard
Joffrion, Mrs. E. C.
Keene, John R.
Kramer, X. A.
Kahao, M. J.
Kahn, Simon
Keller, Jules
Kerlegan, Simon
King, A.
King, G. G.
King, Ivory
King, W. A.
King, Willie
Kleinpeter, F. E.
Kleinpeter, S. L.
Kleipeter, T. W.
Knight Leon & Robichaux
Knight Willie & Martin
Knight Willie & Robichaux
Knobloch, Lufroi
Kratzer & Emare.Myer
Kugler, Geo. F.
King, Griffin
King, Richard
Keller, J. W.
Kemper, W. B.
Knoll, C. F.
King, Nathan
LeBourgeois & Bush
Levert St. John Inc.
Liberty Oil Co.
Lyons, I. L. & Co.
LeBourgeois, R.
Lebermuth & Israel Pltg. Co.
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Lamborn & Co.
Lanaux's T. Sons
Lett, Dr. F. M.
LeBlanc, Est. of D.
Lakeside Co.
Labranch, L.
Lachaussie, Jimmie
Lalande, T. D.
Lambert, Pierre
Lancon, Alcide
Landry & Artmas
Landry & Blanchard
Landry & Boyance
Landry & Broussard
Landry & Comeaux
Landry, Delcambre & Co.
Landry & Roberson
Landry & Savoy
Landry & Shello
Landry & Vincent
Landry, Abadie
Landry, Clomar
Landry, Drosin
Landry, E. D.
Landry, Elie
Landry, Everard
Landry, F. & Boutte
Landry, F. & Ernest Segura
Landry, F. & Wallace Segura
Landry, F. & Walter Segura
Landry, F. & Wilfred Segura
Landry, F. & Shello
Landry, F. & Wallace
Landry, F. & Wilfred
Landry, H. & Suire
Landry, H. & William
Landry, J. Y.
Landry, Ludovic
Landry, Phelias
Landry, Rufus
Landry, Simon
Landry, S. J. & West
Landry, Wallace
Lanoux, Alphonse
Lanoux, Elie
Lanoux, Embrough
Lanoux, Geo.
Lanoux, James
Lanoux, Joseph
Lapeyrolerie, A. C.
Lapeyrolerie, F. & Co.
Lapeyrolerie, Lazard
Lasseigne, G. A.
Latiolas, Wilson
Lavigne, Adam
Loup, Cleomene
Lavigne, Robert
Laviolet, Emile
Lawless, William
Leblanc, Alphonse
Leblanc, Auristle
Leblanc, Etienne
LeBlanc, Frank
Leblanc, J. B. & Bros.
LeBlanc, Joseph
Leblanc, Lazard
Leblanc, Louis
Leblanc, L. B.
Leblanc, Telson
Leblanc, Uval
Leblanc & Lee
Leblanc & Sedotal
Lee, John
Legendre, Mrs. A
Leleux, Mrs. Delphic
Leleux & Delcambre
Lemaire, V. C.
LeSaichierre, J. B.
Lessard, Edward
Lewis, Oscar
Lotta, Peter
Lotta, Joe
Lovettro, Tony
Loyd, I.
Lebeau, Joseph
Lamothe, Willie
Langlois, Mrs. P. O.
Lacour, Charles
Langlois, Octave
Lebeau, Wade
Lyles, E. L.
Little Hope Pltg. Co.
Lebeau, Amicar
Lebeau, Hazael
Langlois, Alex
Langlois, Roselus
Landry, Sam
Landry, Livingston
Lee, Mack
Labbee, Joseph
Landry, Ambrose
Lebeau, Lawrence
Langlois, Etienne
Lindsley, Louis
Levee, L. C.
Langlois, Raoul
LeBlanc, Alcibiard
Landry, U. & Bros.
Landry, Ulyssee
LeGrand, Christophe
LaCroix, Jos.
Landry, Leonard
Lagrange, Philip
Lasseigne, Paul E.
LeJeune, A. J.
Latino, Tony
Legendre, Leonce
Landry, J.
Laurel Ridge P. & M. Co.
Lirette, Oscar
Lirette, Nick
Livaudais & Co.
Landry & Perret
La. Delta Farms Co.
Landry & Landry
LeBouef, Elaire
LeBlanc, Ursin
LaJauni, A. A.
Lyles, W. T.
Landry, K. L.
Landry, Gaston
Lasseigne, Ubald
Latiolais, Clebert
Latiolais, Clebert & Willie Hamilton
Lasseigne, Alphonse
Laviolct, Selivan
Laviolet, Avern
Lavlolet, Lorayel
Lasseigne, Luke
Landry, Jos.
Lasseigne, Valerie
Lasseigne, Clet
Landry, Arestide
Landry, Philip
Lasseigne, Lucien
Landry, U. & L. Oubre
Lasseigne, Mrs. Adam
Laperousse, Espadie
Laperousse, Freddy
Landry, L. & L. Oubre
Latiolais, Robert
Lena, Frank
Lapelle, Albert
Lapeyrouse, Ernest
Lapeyrouse, Octave
Lashbrook, Mrs. M. P.
LeBlanc, Justin
LeBoeuf, Etiene
LeBoeuf, Wilson
Lecompte, Alcee
Lecompte, Americus
Lecompte, A. & C.
Lecompte, Freeman
Lecompte, Jos. G.
Lecompte, Wm.
Lottinger, V. J.
McHugh, James K.
Marine Bank & Trust Co.
Magner, Geo. H.
Mente & Co.
Malone, E. & Sons
Manchello, J.
Marcaloni, Chas.
Marcel & Anitus
Marchand & Bell
Marchand & Louis
Marchand, A. N. & Louis
Marchand, A. P.
Marchand, Aristille
Marchand, Eno
Marchand, F. J.
Marchand, J. B. & Christy
Marchand, J. B.
Marchand, Renes
Marchand, V. J.
Marine & Derouen
Marino, G.
Marino, Tony
Marino & Zito
Martin, Eddie
Martin, Joachim
Matherne, Eddie
Matherne, Willie
Mayet, Oscar
McCoy, Harry
McCrory, C. C.
McCrory, J., Jr.
McInnis, D. E.
Meifert, Fred
Messina, N.
Michell & Broussard
Migues, Mrs. Adophe
Miller, C. D.
Miller, D. B.
Miller & Williams
Millet, Mrs. A.
Millet, Alex
Millet, Seraphine
Mire, Nestor L.
Mire, Telesphore
Monier, Nic
Montalbano, C.
Montalbano, J.
Montegut, C. F., Jr.
Montegut, Fernand
Montz, A.
Montz, Theo.
Montz, R.
Morgan, Dr. L.
Moss, M. A.
Mule, Jack
Myers, Drozen
Myers, Mrs. Lucien
Major, Clebert
Meyer, Willie
Meyer, Wiltz
Mix, Arthur
Miller Leo
Major, Remie
Maniotte, Frank
Mix, Mrs. L. P.
Montgomery, T. W.
Modelice, Cyrial
Meyer, Jerry
Martin, John
Mounger, H. P.
Moniotte, J. H.
Mix, Lelio
Meyers, Willie
Mustache, Lucas
Martin, R. C. & Sons
Marcello, Jos.
Martinez, Lawrence
Madine, Xavier
Madine, Severain
Madine, Severain & J. F.
Martin, Mrs. Theo.
Messina, Dominic
McCarthy, Jos.
Mistretta, C.
Minor, Est. H. C.
Marcello, M.
Moconduit, Clinton
Marcello & Bilello
Melancon, Clay
Milliken & Farwell
McCollam & Cocke
Molere, Paul
McCollam Bros.
Mathews, T. M.
Melancon, Adam
Melancon, John
Milazzo, Santo
Milazzo, Chas.
Mallery, Edgar & W. Lee
Mallery, O. & Van Drake
Melancon, Emile
Melancon, Gilbert
Mallery, Israel
Mallery & Francois
Molbert, Sidney
Mallery & Perrodin
Molbert & Bernis
Marlbrough, Mich.
Marshall, Harrison
Martin, Albert
Martin, Alfred
Martin, Justin
Martin, Louis
Martin, Theophile
Martin, Thomas
Matherne, Clay
Matherne, Ernest
Matherne, Famende
Matherne, Lovincy
Matherne, Ursin
Melancon, Wilson
Moses, Edw.
Myrtle Grove Pltn.
McGraw, Robert
Meeker Sugar Refining Co.
Nelson, Horace
New Orleans Bank & Trust Co.
Nitrate Agencies
Nickons, H. V.
Norris & Joe Migues
Norton, S.
Narcisse, Arthur
Naquin, Emile
Naquin, Camille
Naquin, Eugene
Naquin, Leon
Naquin, Leonie J.
Naquin, Rennie
Norwood, E. J.
Nettles, C. H.
Nicks & Sons, J. M.
Nightshed, Jack
Odom, I. L.
Odom, S.
Olinde, Mitchel
Olinde, Etienne
Owens, C. W.
Olinde, Telesfair
Olinde, Eugene
Olinde, Etienne
Olevier, Oscar
Olivier, Rene
Oubre, Louis
Orphe, Bob
Okey, C. W.
Painter, Horace
Patout, M. A. & Sons
Penick Molasses & Syrup Co.
Pick Fertilizer Co.
Polmer Bros.
Painter, Wm.
Paquet, John
Parcle, Ivy
Parent, Daniel
Parent, Drozin
Parent, Paul Alfred
Parent, S. J.
Parham, Percy
Parm, Andrew
Parms, R. A.
Paulot, M.
Pearson, John
Pecue, W. W.
Pellotte, Pierre
Penter, Harest
Perdue, L. E.
Perilliat, Henry
Perilloux, A. T.
Perilloux, Gypsy
Perilloux, Joe S.
Perilloux, M.

Pertuls & Hall
Pertuis & Hilliard
Pertuis, Mrs. V.
Pertuit, Aleide
Pertuit, Eugene
Petite, J. W.
Petrolia, E.
Petrolia, Gregolio
Phillias & DeBiane
Picard & Geismar
Pitcher & Baker
Poche, Ambrose
Poche, Amede
Plaisance, Raymoud
Polltz, J.
Politz, L.
Politz, N.
Politz, T.
Pregeant, A.
Pregeant, Adrien
Progressive Reaity Inc.
Picard, Guerin
Page, C. E.
Pourciau, Raphael
Paul, Roselus
Poureiau, J. W.
Perkins, Eddie
Parent, Sim
Philippe, Louis
Parent, Oscar
Pourciau, L. E.
Parent, Simeou
Prosser, O. L., Jr.
Prosser, O. L., Sr.
Prescott, Felix
Pearce, Frank
Polite, Beu
Peter, Joe
Patiu, Samuel
Pourciau, Willie
Paul, R.
Phillips, Louis
Patin, George
Pourciau, Joseph
Patiu, Sidney
Pollard, Mrs. Horace
Pourciau, L. E.
Pourciau, Raphael
Perkins, Eddie
Pourciau, Albin
Price, Z. T.
Palo Alto Co., Inc.
Profito, Victor
Poche, Alfred
Pontiff, Wilfred
Pringle, S. W.
Perkins & Bridges
Parker, Wirt
Pearce, S. E.
Polozoio & Bro., Frank
Provosty, Est. O. O.
Palfrey, D. C.
Piliaro, Jake
Perret, U. S.
Pierre, Noel
Perrilleau, Maurice
Peltier, Feruand
Peltier, Cyprien
Peitler, Camille
Price, Octave
Parker, Dr. P. E.
Parker & Falgoust
Peliegrin, Miika
Peiligrin, Oliva
Peiligrin, Willis
Picou, Howard
Pierron, Victor
Pitre, Janvier
Pitre, Gustave
Rainold, E. A., Inc.
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Ratcliffe, Chas. F.
Rebowe, Peter
Reed, Linen
Reine, J. J.
Renard, Edward
Renard, Louis
Renard, Robert
Reynaud, Frank
Richard, Albert
Richard, Arthur
Richardson, Dawson
Richardson, Frank
Richardson, Joe
Richaux, N. J. & Sons
Richaux, N. J.
Ricks & Gonzales
Riggs, C. V.
Roberson, Hillery
Roberson, Sidney
Roberts, Jos.
Roberts, Josiah
Robichaux, Albert
Robichaux, Armogene
Robichaux, Jos.
Robichaux, Octave
Robichaux, Robert
Robichaux, Romain
Robichaux, T. & Sons
Robichaux & Deicambre
Rodrigue, A. H.
Rodrigue, Euphemond
Romain, J. R.
Roppolo, T.
Roppolo, V.
Rome, Johu
Robertson, Elie
Robillard, Julien
Robillard, Clement
Robillard, Denis
Robillard, Ivy
Roy, Joe
Rushing, Mrs. A. O.
Richard, E. G.
Rivet, Israel
Roy, Joseph
Ray, W. H.
Rushing, W. M.
Robillard, D.
Richard, Prosper
Roussel, Numa
Rodesta, Tony
Robichaux, E. G.
Richard, Sidney
Richard, Edgar
Reed, William
Richard, Numa
Rodrigue, Leo
Richard, Alfred
Romero, Mrs. M. C.
Roussel, Eugene
Roussel, Eurick
Roussel, Victor
Richard, Oscar
Richard, Jos. & Co.
Rizzo, B.
Richard, O. L.
Richard, Mrs. Henry
Routier, E. V.
Reulet, Jean
Reni, Sam
Rodrigue, Achille
Russe, Ben
Robichaux, Carlos
Rodrigue, Alcee
Rodrigue, Claude
Robichaux, Noe
Robichaux, Heyward
Robert, Chas.
Ray, Phil
Rodrigue, Aude
Rogers, Clovis
Rogers, Seraphin
Rogers, Van
Schwartz, Jos. Co., Ltd.
Suyers, A. C.
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Sutcliff, W. W.
Supples, J. Sons Pltg. Co., Ltd.
Stauffer, Eshleman & Co.
Sterling Sugars, Inc.
St. Martin & Perret
Stafford, Cal.
Stampley, W. J.
Stansbery, Lilly
Stephens & Johnson
Stephens, E. J.
Stevens, Smith
Suire, Louis
Sulie & Provost
Saizan, Adouis
Singletery, A. G.
Saizan, Frank
Sicard, Geo.
St. Romain, Joseph
Sichard, Frank
Sichard, Numa
Swindler, Frank
Savignol, C.
St. Cyr, Mike
Samson, Joseph
Swann, H. C.
Senteile, G. W.
Smith, C. H.
Snelling, J. G.
St. Romain, Stanley
St. Cyr, Mike
St. Amand, Jules
St. Cyr, Edward
Singletary & Hendersou
Samson, Ernest
Savignol, C.
Samson & August
St. Romain, Ezeb
Samson, Clement
Schwarb, Desire
Sagnibeue, Frauk
Sagnibene, Jos.
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Committee Examines Southdown Cane

At the call of its Chairman, Mr. C. P. Burguieres, the Agricultural Committee of the American Sugar Cane League assembled at Southdown Plantation on Sept. 9th to investigate the condition of the cane there after the storm.

The following comprises the report on this subject sent to the office of the League by the Committee:

"The Committee made a careful examination of all varieties of cane at Southdown to ascertain the damage done by the recent storm. From a physical examination the breakage of P.O.J. 234 is inconsequential, and the apparent damage is not material. Apparently the damage to the P.O.J. 234, as far as future sucrose development is concerned, is much less than any of the native cane."

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